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Field Tests of Industrial Stoker Coal-fired Boilers for Emissions Control and Efficiency Improvement - Site B (Data Supplement)

KVB, Inc., Minneapolis, MN

Prepared for

Industrial Environmental Research Lab., Research Triangle Park, NC

Feb 79

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(Please read Instructions on the reverse before completing)

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16. ABSTRACT

The data supplement is a compilation of test data presented in greater detail than was practical in the final technical report. It provides the necessary details to other researchers who are interested in performing their own analysis. Readers are referred to the final technical report for information on objectives, description of facility tested and coals fired, test equipment and procedures, interpretations, and conclusions. The final technical report contains data summaries not found in this supplement. The supplement contains panel board data for each test, detailed particulate, O_2, CO_2, CO, NO, SO_2, and SO_3 data, particle size distribution data, modified smoke spot data, chemical analysis of the coal, and coal size consistency data.

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Combustion	Flue Gases	Combustion Modification	21B
Coal	Fly Ash	Spreader Stokers	21D
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EPA-600/7-79-041b

February 1979

Field Tests of Industrial Stoker Coal-fired Boilers for Emissions Control and Efficiency Improvement - Site B (Data Supplement)

by

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Program Element No. EHE624

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Washington, DC 20460

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ABSTRACT

The Data Supplement is a compilation of test data presented in greater detail than was practical in the Final Technical Report. It is intended to provide the necessary details to other researchers who are interested in performing their own analysis. Readers are referred to the contract final report for information as to objectives, description of facility tested and coals fired, test equipment and procedures, interpretations and conclusions. The Final Technical Report also contains data summaries not found in this volume. The Supplement contains panel board data for each test, detailed particulate, O_2, CO_2, NO, SO_2 and SO_3 data, particle size distribution data, modified smoke spot data, chemical analysis of the coal and coal size consistency data.

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FOREWORD

The purpose of this Data Supplement Volume is to document data in greater detail than was practical in the Final Technical Report.[1] It is intended to provide the necessary details to other researchers who are interested in performing their own analysis. Readers are referred to the contract final report for information as to objectives, description of facility tested and coals fired, test equipment and procedures, interpretations and conclusions. The Final Technical Report also contains data summaries not found in this volume.

The data in this volume are arranged by type (i.e., Panel Board Data, Particulate Data, etc.) and within each type by test number. Data summaries where they exist are at the front of each section. The boiler tested is referred to as Boiler B; as it is the second boiler tested under the program entitled, "A Testing Program to Update Equipment Specifications and Design Criteria for Stoker Fired Boilers."

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[1]Gabrielson, J. E., et al., "Field Tests of Industrial Stoker Coal-Fired Boilers for Emissions Control and Efficiency Improvement - Site B", EPA-600/7-79-041b, February, 1979.

CONVERSION FACTORS

ENGLISH AND METRIC UNITS TO SI UNITS

To Convert From	To	Multiply By
in	cm	2.540
in^2	cm^2	6.452
ft	m	0.3048
ft^2	m^2	0.09290
ft^3	m^3	0.02832
lb	Kg	0.4536
lb/hr	Mg/s	0.1260
$lb/10^6$BTU	ng/J	430
g/Mcal	ng/J	239
BTU	J	1054
BTU/lb	J/kg	0.002324
BTU/hr	W	0.2929
J/sec	W	1.000
J/hr	W	3600
BTU/ft/hr	W/m	0.9609
BTU/ft/hr	J/hr/m	3459
$BTU/ft^2/hr$	W/m^2	3.152
$BTU/ft^2/hr$	$J/hr/m^2$	11349
$BTU/ft^3/hr$	W/m^3	10.34
$BTU/ft^3/hr$	$J/hr/m^3$	37234
psia	Pa	6895
$"H_2O$	Pa	249.1
Rankine	Celsius	C = 5/9R-273
Fahrenheit	Celsius	C = 5/9(F-32)
Celsius	Kelvin	K = C+273
Rankine	Kelvin	K = 5/9R

COAL FUEL ONLY

ppm @ 3% O_2 (SO_2)	ng/J	0.851
ppm @ 3% O_2 (SO_3)	ng/J	1.063
ppm @ 3% O_2 (NO)	ng/J	0.399
ppm @ 3% O_2 (NO_2)	ng/J	0.611
ppm @ 3% O_2 (CO)	ng/J	0.372
ppm @ 3% O_2 (CH_4)	ng/J	0.213

CONVERSION FACTORS

SI UNITS TO ENGLISH AND METRIC UNITS

To Convert From	TO	Multiply By
cm	in	0.3937
cm^2	in^2	0.1550
m	ft	3.281
m^2	ft^2	10.764
m^3	ft^3	35.315
Kg	lb	2.205
Mg/s	lb/hr	7.937
ng/J	$lb/10^6BTU$	0.00233
ng/J	g/Mcal	0.00418
J	BTU	0.000948
J/kg	BTU/lb	4.303
J/hr/m	BTU/ft/hr	0.000289
$J/hr/m^2$	$BTU/ft^2/hr$	0.0000881
$J/hr/m^3$	$BTU/ft^3/hr$	0.0000269
W	BTU/hr	3.414
W	J/hr	0.000278
W/m	BTU/ft/hr	1.041
W/m^2	$BTU/ft^2/hr$	0.317
W/m^3	$BTU/ft^3/hr$	0.0967
Pa	psia	0.000145
Pa	$"H_2O$	0.004014
Kelvin	Fahrenheit	F = 1.8K-460
Celsius	Fahrenheit	F = 1.8C+32
Fahrenheit	Rankine	R = F+460
Kelvin	Rankine	R = 1.8K

COAL FUEL ONLY

ng/J	ppm @ 3% O_2 (SO_2)	1.18
ng/J	ppm @ 3% O_2 (SO_3)	0.941
ng/J	ppm @ 3% O_2 (NO)	2.51
ng/J	ppm @ 3% O_2 (NO_2)	1.64
ng/J	ppm @ 3% O_2 (CO)	2.69
ng/J	ppm @ 3% O_2 (CH_4)	4.69

SI PREFIXES

Multiplication Factor	Prefix	SI Symbol
10^{12}	tera	T
10^{9}	giga	G
10^{6}	mega	M
10^{3}	kilo	k
10^{2}	hecto*	h
10^{1}	deka*	da
10^{-1}	deci*	d
10^{-2}	centi*	c
10^{-3}	milli	m
10^{-6}	micro	μ
10^{-9}	nano	n
10^{-12}	pico	p
10^{-15}	femto	f
10^{-18}	atto	a

*Not recommended but occasionally used

EMISSIONS UNITS CONVERSION FACTORS
FOR TYPICAL COAL FUEL (HV = 13,320 BTU/LB)

To Obtain \ Multiply by		% Weight In Fuel		lbs/10^6 Btu		grams/10^6 Cal		PPM (Dry @ 3% O_2)		grains/SCF (Dry @ 12% CO_2)	
		S	N	SO_2	NO_2	SO_2	NO_2	SOx	NOx	SO_2	NO_2
% Weight In Fuel	S	1		0.666		0.370		13.2×10^{-4}		1.48	
	N				0.405		0.225		5.76×10^{-4}		.903
lbs/10^6 Btu	SO_2	1.50		1		(.556)		19.8×10^{-4}		(2.23)	
	NO_2		2.47				(.556)		14.2×10^{-4}		(2.23)
grams/10^6 Cal	SO_2	2.70		(1.8)		1		35.6×10^{-4}		(4.01)	
	NO_2		4.44		(1.8)				25.6×10^{-4}		(4.01)
PPM (Dry @ 3% O_2)	SOx	758		505		281		1		1127	
	NOx		1736		704		391				1566
grains/SCF (Dry @ 12% CO_2)	SO_2	.676		(.448)		(.249)		8.87×10^{-4}		1	
	NO_2		1.11		(.448)		(.249)		6.39×10^{-4}		

NOTE: 1. Values in parenthesis can be used for all flue gas constituents such as oxides of carbon, oxides of nitrogen, oxides of sulfur, hydrocarbons, particulates, etc.
2. Standard reference temperature of 530°R was used.

KVB 15900-521

SECTION 1.0

PANEL BOARD DATA

1.1 CONTROL ROOM DATA SHEETS PAGE 2

Coal Designation: Kentucky Cumberland

lb/hr Steam: 82,136

lb/hr Coal: 7,204

lb/hr Feedwater: 84,446

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 1

Date: 12/21/77

Page: 1 of 2

TIME OF READING	11.29	12:01	12:12		
COAL SCALE A COUNTER x 200 lbs	440305	440321	440347		
COAL SCALE B COUNTER x 200 lbs	420860	420875	420897		
FW FLOW INTEGRATOR x 1000 lbs	653083	653139	653228		
STM FLOW INTEGRATOR x 1000 lbs	542819	542874	542960		
OVERFIRE AIR PRESS, "H_2O	24.5	24.5	24.5		
FD FAN DISCHARGE PRESS, "H_2O	0.8	0.8	0.8		
FURNACE PRESSURE, "H_2O	-0.2	-0.2	-0.1		
GRATE DRAFT, "H_2O	-0.2	-0.4	-0.5		
BOILER OUTLET PRESS, "H_2O	-.075	-.08	-.07		
ECONOMIZER INLET PRESS, "H_2O	-2.1	-2.5	-2		
FD FAN AMPS	—	—	—		
OFA FAN AMPS	—	—	—		
DRUM PRESSURE, psig	185	185	185		
FW PRESSURE, psig	275	275	275		
STEAM HEADER PRESSURE, psig	195	195	195		
FW FLOW x 1000 lb/hr	65-110	85	90-100		
STEAM FLOW x 1000 lb/hr	85	85	85		
AIR FLOW, %	40.0	42	40		
FD FAN IN TEMP, °F	—	—	—		
ECON OUT GAS TEMP, °F	360	360	360		
STEAM TEMP, °F	540	540	540		
ECON IN WATER TEMP, °F	240	240	240		
ECON OUT WATER TEMP, °F	290	290	290		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 1

OXYGEN, %	9.5	10.5	10.0		
OPACITY, %	0	0	0		
SO_2, PPM	0-50	0-50	0-50		
DRUM LEVEL CONTROL	2.5	.5	.5		
FEEDWATER CONTROL	32	37	34		
FURNACE PRESSURE CONTROL	-0.2	-0.3	-0.3		
FD FAN DAMPER CONTROL	54	57	53		
AIR FLOW CONTROL	41	42	30		
STEAM/AIR RATIO CONTROL	35	36	29		
OVERFIRE AIR VANCE CONTROL	-6	2	-17		
BOILER SUBMASTER	43	47	38		
PLANT MASTER	180	175	180		
FRONT UPPER OFA PRESS, "H_2O	7.0	7.5	8.5		
FRONT LOWER OFA PRESS, "H_2O	4.0	4.5	4.0		
REAR UPPER OFA PRESS, "H_2O	23	22.5	22.5		
REAR LOWER OFA PRESS, "H_2O	25	25.5	25.5		
BLR HPR REINJECTION PRESS, "H_2O	5	5.0	5.5		
MECH HPR REINJECTION PRESS, "H_2O	5.	5.0	5.5		
GRATE SPEED SETTING (left/right)					

REMARKS: SO_2 BLR OUT

Coal Designation: Kentucky Cumberland

lb/hr Steam: 55,345

lb/hr Coal: 6,517

lb/hr Feedwater: 56,379

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 2

Date: 12/21/77

Page: 1 of 2

TIME OF READING	15:51	16:40	17:47		
COAL SCALE A COUNTER x 200 lbs	440405	440419	440438		
COAL SCALE B COUNTER x 200 lbs	420947	420960	420977		
FW FLOW INTEGRATOR x 1000 lbs	653427	653469	653536		
STM FLOW INTEGRATOR x 1000 lbs	543149	543190	543256		
OVERFIRE AIR PRESS, "H_2O	24	24	24		
FD FAN DISCHARGE PRESS, "H_2O	.8	.8	.8		
FURNACE PRESSURE, "H_2O	-.2	-.1	-.1		
GRATE DRAFT, "H_2O	-.4	-.5	-.45		
BOILER OUTLET PRESS, "H_2O	-.6	-.7	-.75		
ECONOMIZER INLET PRESS, "H_2O	-1.8	-1.7	-1.9		
FD FAN AMPS	—	—	—		
OFA FAN AMPS	—	—	—		
DRUM PRESSURE, psig	185	185	183		
FW PRESSURE, psig	275	275	277		
STEAM HEADER PRESSURE, psig	200	190	190		
FW FLOW x 1000 lb/hr	50-100	65	60		
STEAM FLOW x 1000 lb/hr	55	55	60		
AIR FLOW, %	20	22	28		
FD FAN IN TEMP, °F	—	—	—		
ECON OUT GAS TEMP, °F	380	350	350		
STEAM TEMP, °F	530	540	540		
ECON IN WATER TEMP, °F	240	240	240		
ECON OUT WATER TEMP, °F	270	270	270		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 2

OXYGEN, %	10-11	12	12		
OPACITY, %	0	0	0		
SO_2, PPM	0-50	30	0-50		
DRUM LEVEL CONTROL	.5	1	1		
FEEDWATER CONTROL	20	24	24		
FURNACE PRESSURE CONTROL	.25	-.25	-.30		
FD FAN DAMPER CONTROL	51	54	54		
AIR FLOW CONTROL	21	22	29		
STEAM/AIR RATIO CONTROL	21	23	26		
OVERFIRE AIR VANCE CONTROL	-40	-38	-50		
BOILER SUBMASTER	25	27	31		
PLANT MASTER	182	183	182		
FRONT UPPER OFA PRESS, "H_2O	7.5	7.5	7.5		
FRONT LOWER OFA PRESS, "H_2O	4.5	4.5	4.5		
REAR UPPER OFA PRESS, "H_2O	22.5	22.5	22.5		
REAR LOWER OFA PRESS, "H_2O	25.5	25.5	25.5		
BLR HPR REINJECTION PRESS, "H_2O	5.0	5.5	5.5		
MECH HPR REINJECTION PRESS, "H_2O	5.5	5.5	5.5		
GRATE SPEED SETTING (left/right)		—	—		

REMARKS: Port BLR out - Reading (cont.)

Coal Designation: Hartfield

lb/hr Steam: 54,333

lb/hr Coal: 6800

lb/hr Feedwater: 59,000

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 3

Date: 1/5/78

Page: 1 of 2

TIME OF READING	11:06	12:17	14:06		
COAL SCALE A COUNTER x 200 lbs	447917	447938	447970		
COAL SCALE B COUNTER x 200 lbs	427936	427952	427985		
FW FLOW INTEGRATOR x 1000 lbs	679813	679883	679987		
STM FLOW INTEGRATOR x 1000 lbs	568421	568486	568584		
OVERFIRE AIR PRESS, "H_2O	24	24	24		
FD FAN DISCHARGE PRESS, "H_2O	0.8	0.8	0.8		
FURNACE PRESSURE, "H_2O	-.2	-.1	-.1		
GRATE DRAFT, "H_2O	-.3	-.4	-.5		
BOILER OUTLET PRESS, "H_2O	-.7	-.7	-.7		
ECONOMIZER INLET PRESS, "H_2O	-2.0	-1.9	-1.8		
FD FAN AMPS	—	—	—		
OFA FAN AMPS	—	—	—		
DRUM PRESSURE, psig	180	185	180		
FW PRESSURE, psig	290	290	290		
STEAM HEADER PRESSURE, psig	180	180	180		
FW FLOW x 1000 lb/hr	45	50	55		
STEAM FLOW x 1000 lb/hr	50	55	50		
AIR FLOW, %	22	25	25		
FD FAN IN TEMP, °F	—	—	—		
ECON OUT GAS TEMP, °F	350	350	350		
STEAM TEMP, °F	530	540	540		
ECON IN WATER TEMP, °F	245	245	245		
ECON OUT WATER TEMP, °F	270	270	270		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 3

OXYGEN, %	11.5	12.5	12.0		
OPACITY, %	6	9	8		
SO_2, PPM	0-50	0-50	0-20		
DRUM LEVEL CONTROL	-1	0	2		
FEEDWATER CONTROL	29	22	21		
FURNACE PRESSURE CONTROL	-.3	-.25	-.20		
FD FAN DAMPER CONTROL	55	53	54		
AIR FLOW CONTROL	37	25	22		
STEAM/AIR RATIO CONTROL	31	25	25		
OVERFIRE AIR VANCE CONTROL	-18	-35	-41		
BOILER SUBMASTER	39	32	27		
PLANT MASTER	185	185	185		
FRONT UPPER OFA PRESS, "H_2O	7.0	6.5	6.0		
FRONT LOWER OFA PRESS, "H_2O	4.5	4.5	4.5		
REAR UPPER OFA PRESS, "H_2O	22.0	22.5	22.0		
REAR LOWER OFA PRESS, "H_2O	25.0	25.0	24.5		
BLR HPR REINJECTION PRESS, "H_2O	4.5	5.0	5.0		
MECH HPR REINJECTION PRESS, "H_2O	5.0	5.5	5.0		
GRATE SPEED SETTING (left/right)	—	—	—		

REMARKS: Plant Black + BLR out

Coal Designation: Kentucky Cumberland

lb/hr Steam: 94,557

lb/hr Coal: 10,557

lb/hr Feedwater: 98,734

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 4

Date: 1/6/78

Page: 1 of 2

TIME OF READING	10:11	11:11	12:11	12:49	
COAL SCALE A COUNTER x 200 lbs	428353	428378	428401	428418	
COAL SCALE B COUNTER x 200 lbs	448376	448405	448431	448450	
FW FLOW INTEGRATOR x 1000 lbs	681374	681474	681569	681634	
STM FLOW INTEGRATOR x 1000 lbs	569919	570014	570105	570168	
OVERFIRE AIR PRESS, "H_2O	24	24	24	24	
FD FAN DISCHARGE PRESS, "H_2O	.8	.8	.8	.8	
FURNACE PRESSURE, "H_2O	-.1	-.2	-.2	-.2	
GRATE DRAFT, "H_2O	-.3	-.4	-.2	-.2	
BOILER OUTLET PRESS, "H_2O	-.8	-.75	-.75	-.7	
ECONOMIZER INLET PRESS, "H_2O	-2.1	-2.3	-2.1	-2.1	
FD FAN AMPS	62	63	62	62	
OFA FAN AMPS	108	107	107	107	
DRUM PRESSURE, psig	185	190	185	190	
FW PRESSURE, psig	280	285	285	285	
STEAM HEADER PRESSURE, psig	180	185	180	180	
FW FLOW x 1000 lb/hr	115	110	95	90	
STEAM FLOW x 1000 lb/hr	95	100	95	105	
AIR FLOW, %	45	47	45	50	
FD FAN IN TEMP, °F					
ECON OUT GAS TEMP, °F	385	390	485	362	
STEAM TEMP, °F	550	550	545	545	
ECON IN WATER TEMP, °F	250	245	247	247	
ECON OUT WATER TEMP, °F	50	50	47	48	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 4

OXYGEN, %	8.5	5.0	8.0	8.0	
OPACITY, %	10	8.5	8.0	9	
SO_2, PPM	20	0-30	Pegged	—	
			+ stuck -	failed	
DRUM LEVEL CONTROL	2	1	5	-1	
FEEDWATER CONTROL	42	41	40	41	
FURNACE PRESSURE CONTROL	-.3	-.3	-.3	-.35	
FD FAN DAMPER CONTROL	61	61	65	54	
AIR FLOW CONTROL	48	52	49	41	
STEAM/AIR RATIO CONTROL	42	41	43	41	
OVERFIRE AIR VANCE CONTROL	-4	-10	-8	-10	
BOILER SUBMASTER	52	42	45	42	
PLANT MASTER	182	185	180	185	
FRONT UPPER OFA PRESS, "H_2O	7.5	7.5	7.5	7.5	
FRONT LOWER OFA PRESS, "H_2O	4.5	4.5	4.5	4.5	
REAR UPPER OFA PRESS, "H_2O	22.5	23.0	22.5	22.0	
REAR LOWER OFA PRESS, "H_2O	25.0	25.5	25.0	25.0	
BLR HPR REINJECTION PRESS, "H_2O	5.0	5.0	5.0	5.0	
MECH HPR REINJECTION PRESS, "H_2O	5.0	5.0	5.0	5.5	
GRATE SPEED SETTING (left/right)	—	—	—	—	

REMARKS: Port. at BLR + Mech OUT

Coal Designation: Hatfield

lb/hr Steam: 93,333

lb/hr Coal: 10,303

lb/hr Feedwater: 96,364

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 5A - 5B

Date: 1/8/78

Page: 1 of 2

TIME OF READING	9:43	14:06	15:12	15:45	
COAL SCALE A COUNTER x 200 lbs	429273	429368	424397	424412	
COAL SCALE B COUNTER x 200 lbs	449357	449469	449492	449570	
FW FLOW INTEGRATOR x 1000 lbs	684877	685262	685368	685421	
STM FLOW INTEGRATOR x 1000 lbs	573310	573682	573785	573836	
	5A	5B			
OVERFIRE AIR PRESS, "H_2O	24	23	23		
FD FAN DISCHARGE PRESS, "H_2O	6.8	0.8	0.8		
FURNACE PRESSURE, "H_2O	-0.7	-0.2	-0.3		
GRATE DRAFT, "H_2O	-0.2	-0.3	-0.6		
BOILER OUTLET PRESS, "H_2O	-0.8	-0.7	-0.95		
ECONOMIZER INLET PRESS, "H_2O	-2.2	-1.8	-2.0		
FD FAN AMPS	104	104	—		
OFA FAN AMPS	62	61	—		
DRUM PRESSURE, psig	187	187	190		
FW PRESSURE, psig	285	285	287		
STEAM HEADER PRESSURE, psig	180	182	187		
FW FLOW x 1000 lb/hr	90	92	95		
STEAM FLOW x 1000 lb/hr	95	94	95		
AIR FLOW, %	110	65 steady	95 [illegible]		
FD FAN IN TEMP, °F	370	360	360		
ECON OUT GAS TEMP, °F	532	540	547		
STEAM TEMP, °F	245	243	243		
ECON IN WATER TEMP, °F	245	243	243		
ECON OUT WATER TEMP, °F	260	20?	20?		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 5A-5B

OXYGEN, %	10	8.5	8.0		
OPACITY, %	12 (20)	11-17	11-30		
SO_2, PPM	out of service	005	005		
DRUM LEVEL CONTROL	0A	0A	0A		
FEEDWATER CONTROL	35A	38A	39A		
FURNACE PRESSURE CONTROL	-.25A	-.25A	-.25A		
FD FAN DAMPER CONTROL	52A	51M	60M		
AIR FLOW CONTROL	48A	43M	36M		
STEAM/AIR RATIO CONTROL	79.5	57	58		
OVERFIRE AIR VANCE CONTROL	0M	0M	0M		
BOILER SUBMASTER	47A	42A	42A		
PLANT MASTER	185A	185A	183A		
FRONT UPPER OFA PRESS, "H_2O	7.3	7.0	5.0		
FRONT LOWER OFA PRESS, "H_2O	4.5	4.4	4.5		
REAR UPPER OFA PRESS, "H_2O	22.5	22	22		
REAR LOWER OFA PRESS, "H_2O	25.0	24.5	25		
BLR HPR REINJECTION PRESS, "H_2O	4.0	5.0	5.0		
MECH HPR REINJECTION PRESS, "H_2O	5.0				
GRATE SPEED SETTING (left/right)	3.0/3.5	3.0/3.5			

REMARKS: A - Automatic M-manual

KVB

NOTES

TEST NO: 5A Operator says grate takes about 4 hrs. to turn over once. Operator trys to maintain 3-4 inches bed on the grate.

~~Operator mentioned~~ 2 sections of the grate are warped and will probably be removed tomorrow. We don't know yet how this will affect our testing. CO is very low, O_2 ~ 7%, the ash bed is even left to right at about 1½-2". No clinkers. Ash very fine.

TEST NO: Fire is not impinging on either front or back water walls except under rear arch. Flame looks good, only slightly smokey.

11:16 steam/air ratio lowered from 70 to 45. When lowered from 80 to 70 no change was seen.

Hatfield coal today, more fines than normal according to coal

TEST NO: handlers

left side of boiler is East side, right side is West side

5B ~~Clinkers~~ Coal piling up under feeders #3 & 4 (left side).

14:20 piles were raked down. They were 2 feet high & extended back about 3-4 feet. Problem is fine wet coal, possibly a result

TEST NO: of the coal strike.

Air was lowered by putting FD Damper control on manual. This works fine as long as load is held reasonably steady.

15:15 Operator was forced to raise air because of severe clinkering.

15:40 Test was stopped earlier than planned because of problems

TEST NO: with fines. 15:50 unit #14 was shut down. Slightly more than 2 ft^3 had been pulled on the Brink.

Tomorrow we plan to work on the boiler hopper and mech. hopper ash collection system for the flow rate & reinjection tests.

Coal Designation: Southeast

lb/hr Steam: 150,982

lb/hr Coal: 16,233

lb/hr Feedwater: 156,000

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 6

Date: 1/11/78

Page: 1 of 2

TIME OF READING	10:33	11:24	12:29	15:08	
COAL SCALE A COUNTER x 200 lbs	429830	429863	429910	430006	
COAL SCALE B COUNTER x 200 lbs	449952	449989	450042	450148	
FW FLOW INTEGRATOR x 1000 lbs	686942	687077	687267	687657	
STM FLOW INTEGRATOR x 1000 lbs	575275	575405	575592	575967	
OVERFIRE AIR PRESS, "H_2O	25	25	25	30	
FD FAN DISCHARGE PRESS, "H_2O	1.8	1.2	1.4	1.2	
FURNACE PRESSURE, "H_2O	-.2	-.1	-.1	-.1	
GRATE DRAFT, "H_2O	+.2	+0.2	+0.4	+0.2	
BOILER OUTLET PRESS, "H_2O	-1.2	-0.9	-1.2	-1.2	
ECONOMIZER INLET PRESS, "H_2O	-4.2	-3.5	-4.0	-3.3	
FD FAN AMPS	73	67	68	68	
OFA FAN AMPS	110	110	110	113	
DRUM PRESSURE, psig	175	177	175	205	
FW PRESSURE, psig	275	275	275	275	
STEAM HEADER PRESSURE, psig	180	182	180	187	
FW FLOW x 1000 lb/hr	145	175	~150	147	
STEAM FLOW x 1000 lb/hr	160	155	155	155	
AIR FLOW, %	180	150	155	155	
FD FAN IN TEMP, °F					
ECON OUT GAS TEMP, °F	408	396	392	388	
STEAM TEMP, °F	550	545	543	548	
ECON IN WATER TEMP, °F	245	244	243	241	
ECON OUT WATER TEMP, °F	270	270	270	270	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 6

OXYGEN, %	12	10	10.5	10	
OPACITY, %	10	7	7	7	
SO_2, PPM	005	005	005	005	
DRUM LEVEL CONTROL	0	0A	0	0	
FEEDWATER CONTROL	68	60A	66	65	
FURNACE PRESSURE CONTROL	-.2	-.2A	-.2	-.2	
FD FAN DAMPER CONTROL	55.5	55A	55	78	
AIR FLOW CONTROL	62	57.5A	62	65	
STEAM/AIR RATIO CONTROL	54.5	54M	54	54	
OVERFIRE AIR VANCE CONTROL	50	50M	50	55	
BOILER SUBMASTER	22	22A	22	15	
PLANT MASTER	185	185A	185	185	
FRONT UPPER OFA PRESS, "H_2O	8.0	8.0			
FRONT LOWER OFA PRESS, "H_2O	5.0	5.0			
REAR UPPER OFA PRESS, "H_2O	23.0	23.0			
REAR LOWER OFA PRESS, "H_2O	26.5	26.5			
BLR HPR REINJECTION PRESS, "H_2O	5.0	5.5			
MECH HPR REINJECTION PRESS, "H_2O	4.5	5.0			
GRATE SPEED SETTING (left/right)	2.1 / 2.8				

REMARKS: 10.00AM - Raise load to 160 K lb/hr. 10:13 load stopped at 150k for 5 min. Recorder Request to raise to 160k (then boiler reads 150 & turbine reads 160) 10:20 - established at load
11:00 Coal samples taken + quartered.
11:35 - Second set of coal samples taken
12:30 - Third coal sample taken 12:50 First Multiclone dust sample taken
15:05 - Notice given that testing was finished and load could be reduced.

Coal Designation: Southern

lb/hr Steam: 151,685

lb/hr Coal: 18,337

lb/hr Feedwater: 154,775

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 7

Date: 1/12/78

Page: 1 of 2

TIME OF READING	10:24	12:03			
COAL SCALE A COUNTER x 200 lbs	430447	430 72			
COAL SCALE B COUNTER x 200 lbs	450624	450695			
FW FLOW INTEGRATOR x 1000 lbs	684371	689608			
STM FLOW INTEGRATOR x 1000 lbs	577632	577857			
OVERFIRE AIR PRESS, "H_2O	5	5			
FD FAN DISCHARGE PRESS, "H_2O	1.2	1.8			
FURNACE PRESSURE, "H_2O	-0.2	-0.2			
GRATE DRAFT, "H_2O	+0.1	+0.6			
BOILER OUTLET PRESS, "H_2O	-0.9	-1.0			
ECONOMIZER INLET PRESS, "H_2O	-3.0	-3.2			
FD FAN AMPS	66	70			
OFA FAN AMPS	89	88			
DRUM PRESSURE, psig	204	205			
FW PRESSURE, psig	275	275			
STEAM HEADER PRESSURE, psig	187	190			
FW FLOW x 1000 lb/hr	150	152			
STEAM FLOW x 1000 lb/hr	155	155			
AIR FLOW, %	155	165			
FD FAN IN TEMP, °F					
ECON OUT GAS TEMP, °F	386	400			
STEAM TEMP, °F	530	545			
ECON IN WATER TEMP, °F	245	245			
ECON OUT WATER TEMP, °F	23 005	23 005			

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 7

OXYGEN, %	5.5	5.0			
OPACITY, %	9	9			
SO_2, PPM	005	005			
DRUM LEVEL CONTROL	0	0			
FEEDWATER CONTROL	64	64			
FURNACE PRESSURE CONTROL	-0.2	-0.2			
FD FAN DAMPER CONTROL	72	75			
AIR FLOW CONTROL	63	67			
STEAM/AIR RATIO CONTROL	59.5	65			
OVERFIRE AIR VANCE CONTROL	25	25			
BOILER SUBMASTER	7	80			
PLANT MASTER	183	183			
FRONT UPPER OFA PRESS, "H_2O	8.0	8.0			
FRONT LOWER OFA PRESS, "H_2O	5.0	5.0			
REAR UPPER OFA PRESS, "H_2O	6.0	6.0			
REAR LOWER OFA PRESS, "H_2O	12.0	12.0			
BLR HPR REINJECTION PRESS, "H_2O	5.0	8.0			
MECH HPR REINJECTION PRESS, "H_2O	5.0	6.0			
GRATE SPEED SETTING (left/right)	3.0/3.6	3.0/3.6			

REMARKS: Port BLR out + Mech - Min O.F.A. @ 9:30 load raised from 80 to 160k
Heavy clinkering when ash pulling after Test #6
Coal Sample Taken at 10:50. No Clinkers, appears to be
burning well

Coal Designation:

lb/hr Steam: 149,000

lb/hr Coal: 16,100

lb/hr Feedwater: 154,000

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 8

Date: 1/25/78

Page: 1 of 2

TIME OF READING	10:37	11:37	12:37		
COAL SCALE A COUNTER x 200 lbs	456523	456547	456587		
COAL SCALE B COUNTER x 200 lbs	436869	436406	436446		
FW FLOW INTEGRATOR x 1000 lbs	710924	711077	711232		
STM FLOW INTEGRATOR x 1000 lbs	548107	548256	548405		
OVERFIRE AIR PRESS, "H_2O	27	29	28		
FD FAN DISCHARGE PRESS, "H_2O	1.8	2.8	2.0		
FURNACE PRESSURE, "H_2O	0	0	-0.2		
GRATE DRAFT, "H_2O	-0.7	-0.8	-1.3		
BOILER OUTLET PRESS, "H_2O	-1.2	-1.2	-1.3		
ECONOMIZER INLET PRESS, "H_2O	-3.3	-4.7	-4.4		
FD FAN AMPS	70	73	72		
OFA FAN AMPS	105	107	107		
DRUM PRESSURE, psig	190	190	190		
FW PRESSURE, psig	260	260	260		
STEAM HEADER PRESSURE, psig	190	190	190		
FW FLOW x 1000 lb/hr	120	150	140		
STEAM FLOW x 1000 lb/hr	145	160	150		
AIR FLOW, %	70	75	75		
FD FAN IN TEMP, °F	70	70	70		
ECON OUT GAS TEMP, °F	400	420	405		
STEAM TEMP, °F	520	550	550		
ECON IN WATER TEMP, °F	250	250	245		
ECON OUT WATER TEMP, °F	005	005	005		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 8

OXYGEN, %	was at 8 just now	00.5	00.5		
OPACITY, %	15	10	10		
SO_2, PPM	00.5	00.5	00.5		
DRUM LEVEL CONTROL	2	0	1		
FEEDWATER CONTROL	65	65	58		
FURNACE PRESSURE CONTROL	-2	-2	-2		
FD FAN DAMPER CONTROL	31	85	87		
AIR FLOW CONTROL	80	84	78		
STEAM/AIR RATIO CONTROL	68	65	60		
OVERFIRE AIR VANCE CONTROL	40	50	58		
BOILER SUBMASTER	2	86	90		
PLANT MASTER	180	180	180		
FRONT UPPER OFA PRESS, "H_2O	7.0	7.5	7.8		
FRONT LOWER OFA PRESS, "H_2O	5.0	5.0	5.0		
REAR UPPER OFA PRESS, "H_2O	29	29	29		
REAR LOWER OFA PRESS, "H_2O	27	27	27		
BLR HPR REINJECTION PRESS, "H_2O	5.0	5.5	5.5		
MECH HPR REINJECTION PRESS, "H_2O	3.5	3.0	3.0		
GRATE SPEED SETTING (left/right)	5.0/5.0	5.0/7.0	5.0/7.0		

REMARKS: High excess O_2 At 11:00 AM O_2 in control room read 18% but Truck read 0.25% at 11:10 AM O_2 in control room read 22%. Grate bed At 11:40 = 2", 2", 3", 8", 6"

Coal Designation: Kentucky Combined

lb/hr Steam: 145,000

lb/hr Coal: 16,300

lb/hr Feedwater: 148,000

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 9

Date: 1/25/78

Page: 1 of 2

TIME OF READING	16:19	17:19	18:19		
COAL SCALE A COUNTER x 200 lbs	456729	456769	456809		
COAL SCALE B COUNTER x 200 lbs	436586	436624	436669		
FW FLOW INTEGRATOR x 1000 lbs	711764	711911	712060		
STM FLOW INTEGRATOR x 1000 lbs	597916	598059	598206		
OVERFIRE AIR PRESS, "H_2O	27.5	28	27		
FD FAN DISCHARGE PRESS, "H_2O	1.0	1.0	1.0		
FURNACE PRESSURE, "H_2O	-0.1	-0.1	-0.1		
GRATE DRAFT, "H_2O	0	0	0		
BOILER OUTLET PRESS, "H_2O	-0.8	-1.0	-1.0		
ECONOMIZER INLET PRESS, "H_2O	-2.8	-3.0	-3.0		
FD FAN AMPS	64	65	65		
OFA FAN AMPS	105	106	106		
DRUM PRESSURE, psig	190	195	195		
FW PRESSURE, psig	260	260	260		
STEAM HEADER PRESSURE, psig	190	200	195		
FW FLOW x 1000 lb/hr	140	150	150		
STEAM FLOW x 1000 lb/hr	260	260	260		
AIR FLOW, %	190	200	195		
FD FAN IN TEMP, °F	70	71	—		
ECON OUT GAS TEMP, °F	390	390	400		
STEAM TEMP, °F	550	555	540		
ECON IN WATER TEMP, °F	245	245	245		
ECON OUT WATER TEMP, °F	005	005	005		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 9

OXYGEN, %	7.0	6.0	6.0		
OPACITY, %	8	10-30	7-16		
SO_2, PPM	003	003	003		
DRUM LEVEL CONTROL	0	1	0		
FEEDWATER CONTROL	62	65	35		
FURNACE PRESSURE CONTROL	-3	-2	-3		
FD FAN DAMPER CONTROL	82	70	70		
AIR FLOW CONTROL	67	61	61		
STEAM/AIR RATIO CONTROL	65	64	66		
OVERFIRE AIR VANCE CONTROL	58	30	40		
BOILER SUBMASTER	11	12	12		
PLANT MASTER	180	185	180		
FRONT UPPER OFA PRESS, "H_2O	7.5	7.5	7.5		
FRONT LOWER OFA PRESS, "H_2O	5.0	5.0	5.0		
REAR UPPER OFA PRESS, "H_2O	27	26	26		
REAR LOWER OFA PRESS, "H_2O	29	28	28		
BLR HPR REINJECTION PRESS, "H_2O	6.0	5.5	5.5		
MECH HPR REINJECTION PRESS, "H_2O	5.0	5.0	5.0		
GRATE SPEED SETTING (left/right)	4/5	4/5	4/5		

REMARKS: ~ 7% excess air / Coal very wet. The coal scale jammed just before completion of test.

Coal Designation: Southeast

lb/hr Steam: 62,525

lb/hr Coal: 7268

lb/hr Feedwater: 64,225

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 10

Date: 1/27/78

Page: 1 of 2

TIME OF READING	10:17	10:52	11:28		
COAL SCALE A COUNTER x 200 lbs	437514	437526	437538		
COAL SCALE B COUNTER x 200 lbs	457653	457663	457672		
FW FLOW INTEGRATOR x 1000 lbs	715067	716106	715143		
STM FLOW INTEGRATOR x 1000 lbs	602020	602116	602154		
OVERFIRE AIR PRESS, "H_2O	28	28	28		
FD FAN DISCHARGE PRESS, "H_2O	0.8	0.8	0.8		
FURNACE PRESSURE, "H_2O	-0.1	-0.1	-0.1		
GRATE DRAFT, "H_2O	-0.4	-0.6	-0.3		
BOILER OUTLET PRESS, "H_2O	-0.7	-0.7	-0.8		
ECONOMIZER INLET PRESS, "H_2O	-2.0	-1.9	2.7		
FD FAN AMPS	63	63	64		
OFA FAN AMPS	107	109	110		
DRUM PRESSURE, psig	185	185	180		
FW PRESSURE, psig	260	260	265		
STEAM HEADER PRESSURE, psig	190	195	190		
FW FLOW x 1000 lb/hr	85	60	60		
STEAM FLOW x 1000 lb/hr	60	50	60		
AIR FLOW, %	22	10	49		
FD FAN IN TEMP, °F	—	—	—		
ECON OUT GAS TEMP, °F	360	355	360		
STEAM TEMP, °F	540	545	525		
ECON IN WATER TEMP, °F	240	240	240		
ECON OUT WATER TEMP, °F	005	005	005		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 10

OXYGEN, %	10	8	12.5		
OPACITY, %	9-14	9-15	9-12		
SO_2, PPM	005	005	005		
DRUM LEVEL CONTROL	-1	-1	-1		
FEEDWATER CONTROL	35	30	30		
FURNACE PRESSURE CONTROL	-0.3	-0.3	-0.3		
FD FAN DAMPER CONTROL	65	55	50		
AIR FLOW CONTROL	30	5	50		
STEAM/AIR RATIO CONTROL	30	25	25		
OVERFIRE AIR VANCE CONTROL	-30	-40	-40		
BOILER SUBMASTER	47	40	42		
PLANT MASTER	180	180	185		
FRONT UPPER OFA PRESS, "H_2O	7.5	7.0	7.0		
FRONT LOWER OFA PRESS, "H_2O	4.0	5.0	5.0		
REAR UPPER OFA PRESS, "H_2O	27.5	26.0	28.0		
REAR LOWER OFA PRESS, "H_2O	29	28.5	29.0		
BLR HPR REINJECTION PRESS, "H_2O	6.0	6.0	5.5		
MECH HPR REINJECTION PRESS, "H_2O	7.0	8.5	7.0		
GRATE SPEED SETTING (left/right)					

REMARKS: Very O_2 low Load (30%) would not permit lower O_2 than 8.8%

Coal Designation: Reload
lb/hr Steam: 95,226
lb/hr Coal: 9,910
lb/hr Feedwater: 98,323

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 11
Date: 1/28/78
Page: 1 of 2

TIME OF READING	09:37	10:37	11:37	12:12	
COAL SCALE A COUNTER x 200 lbs	458061	458084	458109	458123	
COAL SCALE B COUNTER x 200 lbs	437995	438026	438046	438061	
FW FLOW INTEGRATOR x 1000 lbs	716684	716782	716879	716938	
STM FLOW INTEGRATOR x 1000 lbs	603653	603745	603841	603899	
OVERFIRE AIR PRESS, "H_2O	29	29	29	28	
FD FAN DISCHARGE PRESS, "H_2O	0.8	0.8	0.8	0.8	
FURNACE PRESSURE, "H_2O	-0.2	0	-0.5	-0.6	
GRATE DRAFT, "H_2O	-0.4	-0.3	-0.5	-0.8	
BOILER OUTLET PRESS, "H_2O	-1.0	-0.7	-1.0	-0.8	
ECONOMIZER INLET PRESS, "H_2O	-2.8	-2.3	-2.9	-2.7	
FD FAN AMPS	64	64	65	65	
OFA FAN AMPS	110	110	110	110	
DRUM PRESSURE, psig	185	190	185	185	
FW PRESSURE, psig	245	240	235	235	
STEAM HEADER PRESSURE, psig	190	190	185	185	
FW FLOW x 1000 lb/hr	100	100	95	100	
STEAM FLOW x 1000 lb/hr	100	90	105	95	
AIR FLOW, %	50	39	50	50	
FD FAN IN TEMP, °F	52	—	—	—	
ECON OUT GAS TEMP, °F	375	390	380	385	
STEAM TEMP, °F	530	535	540	540	
ECON IN WATER TEMP, °F	240	240	240	240	
ECON OUT WATER TEMP, °F	005	005	275	275	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 11

OXYGEN, %	9.0	9.0	10.0	9.0	
OPACITY, %	9-12	8-12	8-10	10-12	
SO_2, PPM	005	005	005	005	
Note: O_2 dropped to 7.5%	between	1st + 2nd	reading		
DRUM LEVEL CONTROL	0	2	0	-1	
FEEDWATER CONTROL	43	38	41	42	
FURNACE PRESSURE CONTROL	-0.25	-.30	-.25	-.25	
FD FAN DAMPER CONTROL	65	66	63	57	
AIR FLOW CONTROL	50	48	57	57	
STEAM/AIR RATIO CONTROL	43	42	48	36	
OVERFIRE AIR VANCE CONTROL	-3	-25	2	-3	
BOILER SUBMASTER	62	57	72	55	
PLANT MASTER	180	180	180	180	
FRONT UPPER OFA PRESS, "H_2O	7.0	7.5	7.5	7.5	
FRONT LOWER OFA PRESS, "H_2O	6.0	4.5	5.0	5.0	
REAR UPPER OFA PRESS, "H_2O	27	27	22.5	22.5	
REAR LOWER OFA PRESS, "H_2O	29	29	29	29	
BLR HPR REINJECTION PRESS, "H_2O	6	6	6	6	
MECH HPR REINJECTION PRESS, "H_2O	2	2	2	2	
GRATE SPEED SETTING (left/right)	2.5/3	2.5/3	2.5/2.5	2.5/2.5	

REMARKS: Max. C.F.A. throughout Test. / Coal bed even - about 1" thick. Coal dry - mid of proper size.

Coal Designation: Reload

lb/hr Steam: 97,476

lb/hr Coal: 11,077

lb/hr Feedwater: 101,026

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 12

Date: 7/28/78

Page: 1 of 2

TIME OF READING	15:00	16:00	16:57		
COAL SCALE A COUNTER x 200 lbs	458179	458205	458231		
COAL SCALE B COUNTER x 200 lbs	438122	438100	438178		
FW FLOW INTEGRATOR x 1000 lbs	717159	717260	717356		
STM FLOW INTEGRATOR x 1000 lbs	604112	604209	604302		
OVERFIRE AIR PRESS, "H_2O	5	5	5		
FD FAN DISCHARGE PRESS, "H_2O	.9	.8	.8		
FURNACE PRESSURE, "H_2O	-0.1	-0.1	-0.1		
GRATE DRAFT, "H_2O	-0.2	-0.2	-0.1		
BOILER OUTLET PRESS, "H_2O	-0.8	-0.9	-1.0		
ECONOMIZER INLET PRESS, "H_2O	-2.3	-2.2	-2.5		
FD FAN AMPS	64	64	64		
OFA FAN AMPS	87	87	87		
DRUM PRESSURE, psig	185	192	190		
FW PRESSURE, psig	270	270	270		
STEAM HEADER PRESSURE, psig	185	190	190		
FW FLOW x 1000 lb/hr	105	100	105		
STEAM FLOW x 1000 lb/hr	95	105	110		
AIR FLOW, %	42	47	50		
FD FAN IN TEMP, °F	51	—	—		
ECON OUT GAS TEMP, °F	385	390	375		
STEAM TEMP, °F	535	530	530		
ECON IN WATER TEMP, °F	240	240	240		
ECON OUT WATER TEMP, °F	260	260	260		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 12

OXYGEN, %	6.5	6.0	6.0		
OPACITY, %	8-20	8-10	8-13		
SO_2, PPM	005	005	005		
DRUM LEVEL CONTROL	0	1	1		
FEEDWATER CONTROL	42	42	42		
FURNACE PRESSURE CONTROL	-0.2	-0.25	-0.3		
FD FAN DAMPER CONTROL	54	58	65		
AIR FLOW CONTROL	44	49	57		
STEAM/AIR RATIO CONTROL	40	40	46		
OVERFIRE AIR VANCE CONTROL	-22	0	9		
BOILER SUBMASTER	56	69	74		
PLANT MASTER	185	185	180		
FRONT UPPER OFA PRESS, "H_2O	7.5	7.5	7.5		
FRONT LOWER OFA PRESS, "H_2O	5.0	5.0	5.0		
REAR UPPER OFA PRESS, "H_2O	5.5	5.0	5.0		
REAR LOWER OFA PRESS, "H_2O	11.0	11.0	11.0		
BLR HPR REINJECTION PRESS, "H_2O	6.5	6.0	6.5		
MECH HPR REINJECTION PRESS, "H_2O	2.0	2.0	2.0		
GRATE SPEED SETTING (left/right)	2.0/2.0	2.0/2.0	2.0/2.0		

REMARKS: Coal wet, Ash bed depth = 1"

Coal Designation: Reload

lb/hr Steam: 142,168

lb/hr Coal: 149,921

lb/hr Feedwater: 15,327

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 13

Date: 2/3/78

Page: 1 of 2

TIME OF READING	14:33	15:05	15:22	15:49	16:14
COAL SCALE A COUNTER x 200 lbs	454735	457758	459769	459787	459805
COAL SCALE B COUNTER x 200 lbs	439610	439630	439639	439654	439669
FW FLOW INTEGRATOR x 1000 lbs	722568	722657	722689	722754	722817
STM FLOW INTEGRATOR x 1000 lbs	609232	609313	609350	609412	609473
OVERFIRE AIR PRESS, "H_2O	34	35	36	38	5
FD FAN DISCHARGE PRESS, "H_2O	1.9	1.0	0.9	1.1	1.9
FURNACE PRESSURE, "H_2O	-0.2	-0.2	-0.2	-0.2	-0.1
GRATE DRAFT, "H_2O	-0.4	0	-0.1	0	-0.3
BOILER OUTLET PRESS, "H_2O	-1.1	-1.0	-0.9	-1.3	-1.3
ECONOMIZER INLET PRESS, "H_2O	-4.0	-3.4	-3.0	-4.4	-4.0
FD FAN AMPS	67	67	66	66	71
OFA FAN AMPS	116	116	116	116	91
DRUM PRESSURE, psig	180	185	190	195	195
FW PRESSURE, psig	250	250	260	255	260
STEAM HEADER PRESSURE, psig	180	180	190	190	190
FW FLOW x 1000 lb/hr	155	160	150	150	150
STEAM FLOW x 1000 lb/hr	150	150	145	145	145
AIR FLOW, %	70	60	50	60	75
FD FAN IN TEMP, °F	—	—	—	—	—
ECON OUT GAS TEMP, °F	345	375	370	370	390
STEAM TEMP, °F	530	560	570	575	570
ECON IN WATER TEMP, °F	240	240	245	245	245
ECON OUT WATER TEMP, °F	005	005	005	005	005

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 13

OXYGEN, % Readings from Van	7.5	5.9	4.7	7.5	—
OPACITY, %	17-27	11-16	12-16	9-12	9-13
SO_2, PPM	005	005	005	005	005
DRUM LEVEL CONTROL	-3	+3	0	0	1
FEEDWATER CONTROL	61	60	61	58	54
FURNACE PRESSURE CONTROL	-.3	-.3	-.25	-.25	-.25
FD FAN DAMPER CONTROL	78	70	64	76	83
AIR FLOW CONTROL	72	62	52	70	75
STEAM/AIR RATIO CONTROL	58	60	60	60	62
OVERFIRE AIR VANCE CONTROL	30	40	40	30	30
BOILER SUBMASTER	72	77	78	72	73
PLANT MASTER	175	177	180	180	180
FRONT UPPER OFA PRESS, "H_2O	7.5	7.5	7.0	7.0	8.0
FRONT LOWER OFA PRESS, "H_2O	4.5	5.0	4.5	4.5	5.0
REAR UPPER OFA PRESS, "H_2O	22.5	32.5	33.5	35.0	6.5
REAR LOWER OFA PRESS, "H_2O	35.0	33.5	5.0	35.5	12.0
BLR HPR REINJECTION PRESS, "H_2O	6.0	6.0	6.5	6.0	6.0
MECH HPR REINJECTION PRESS, "H_2O	3.0	3.0	3.0	5.0	.0
GRATE SPEED SETTING (left/right)	4.0/3.5	4.5/5.0	5.0/5.0	5.0/5.0	6.0/5.0

REMARKS: Low O.F.A. - Very O_2
Ash bed even at about 1" deep. Manual Controls were used to lower Overfire Air.

Coal Designation: Reload

lb/hr Steam: 184,565

lb/hr Coal: 20,869.6

lb/hr Feedwater: 191,489

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 14

Date: 2/4/78

Page: 1 of 2

TIME OF READING	12:08	12:37	12:55	13:17	
COAL SCALE A COUNTER x 200 lbs	460260	460285	460306	460325	
COAL SCALE B COUNTER x 200 lbs	440071	440094	490109	440126	
FW FLOW INTEGRATOR x 1000 lbs	724364	724454	724518	724587	
STM FLOW INTEGRATOR x 1000 lbs	610982	611072	611132	611200	
OVERFIRE AIR PRESS, "H_2O	29	28	28	29	
FD FAN DISCHARGE PRESS, "H_2O	3.1	2.2	1.7	3.0	
FURNACE PRESSURE, "H_2O	-0.2	-0.2	-0.2	-0.1	
GRATE DRAFT, "H_2O	-0.7	-0.4	-0.2	-0.4	
BOILER OUTLET PRESS, "H_2O	-1.6	-1.4	-1.4	-1.6	
ECONOMIZER INLET PRESS, "H_2O	-5.9	-5.8	-6.3	-6.0	
FD FAN AMPS	82	76	74	83	
OFA FAN AMPS	114	114	114	114	
DRUM PRESSURE, psig	215	210	210	210	
FW PRESSURE, psig	270	265	270	270	
STEAM HEADER PRESSURE, psig	200	195	195	195	
FW FLOW x 1000 lb/hr	200	200	200	195	
STEAM FLOW x 1000 lb/hr	200	197	195	195	
AIR FLOW, %	84	76	70	89	
FD FAN IN TEMP, °F	—	—	—	—	
ECON OUT GAS TEMP, °F	410	407	405	410	
STEAM TEMP, °F	570	565	580	580	
ECON IN WATER TEMP, °F	240	245	245	245	
ECON OUT WATER TEMP, °F	005	005	005	005	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 14

OXYGEN, % from truck	5.7	4.5	3.5		
OPACITY, %	13-21	9-13	9-12	9-25	
SO_2, PPM	003	003	003	003	
DRUM LEVEL CONTROL	-2	+2	0	0	
FEEDWATER CONTROL	80	82	78	79	
FURNACE PRESSURE CONTROL	-.2	-.25	-.3	-.25	
FD FAN DAMPER CONTROL	98	92	100+	95	
AIR FLOW CONTROL	92	85	74	92	
STEAM/AIR RATIO CONTROL	82	80	80	80	
OVERFIRE AIR VANCE CONTROL	42	44	40	44	
BOILER SUBMASTER	84	85	84	86	
PLANT MASTER	185	180	180	185	
FRONT UPPER OFA PRESS, "H_2O	8.0	8.0	7.5	7.5	
FRONT LOWER OFA PRESS, "H_2O	5.0	4.5	5.0	4.5	
REAR UPPER OFA PRESS, "H_2O	27.0	26.0	26.0	26.0	
REAR LOWER OFA PRESS, "H_2O	29.0	29.0	29.0	29.0	
BLR HPR REINJECTION PRESS, "H_2O	6.5	6.5	6.5	6.5	
MECH HPR REINJECTION PRESS, "H_2O	5.0	6.0	5.0	5.0	
GRATE SPEED SETTING (left/right)	6.0/6.2	6.0/6.2	6.0/6.2	6.0/6.2	

REMARKS: Vary O_2, Med. OFA.
a. Fuel Bed 1" Deep
b. lost load at 13:00 dropped to 100 k lb/hr.

Coal Designation: Reload

lb/hr Steam: 174,803

lb/hr Coal: 18,945

lb/hr Feedwater: 181890

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 15

Date: 2/6/78

Page: 1 of 2

TIME OF READING	14:48	15:15	15:45	16:44	17:30	18:14	19:02	
COAL SCALE A COUNTER x 200 lbs	441367						441562	
COAL SCALE B COUNTER x 200 lbs	461559						461765	
FW FLOW INTEGRATOR x 1000 lbs	729203						729973	
STM FLOW INTEGRATOR x 1000 lbs	615603						616348	
OVERFIRE AIR PRESS, "H_2O	27	27	27	27	28	28	27	
FD FAN DISCHARGE PRESS, "H_2O	1.0	1.2	1.0	1.4	1.4	1.5	1.6	
FURNACE PRESSURE, "H_2O	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	
GRATE DRAFT, "H_2O	0.2	0.2	0.2	0.2	0.1	0.2	0.2	
BOILER OUTLET PRESS, "H_2O	-1.0	-1.0	-1.0	-1.2	-1.2	-1.2	-1.2	
ECONOMIZER INLET PRESS, "H_2O	-3.3	-3.3	-3.2	-4.0	-4.0	-4.0	-4.2	
FD FAN AMPS	68	69	68	70	71	71	72	
OFA FAN AMPS	111	112	111	112	112	111	112	
DRUM PRESSURE, psig	206	206	206	206	205	208	210	
FW PRESSURE, psig	275	273	270	275	275	275	275	
STEAM HEADER PRESSURE, psig	195	194	190	190	189	186	190	
FW FLOW x 1000 lb/hr	185	185	180	180	175	180	176	
STEAM FLOW x 1000 lb/hr	180	180	180	180	185	183	185	
AIR FLOW, %	58	58	54	67	68	67	68	
FD FAN IN TEMP, °F	48		—		—		—	
ECON OUT GAS TEMP, °F	350	350	390	402	403	400	401	
STEAM TEMP, °F	555	560	560	560	560	560	570	
ECON IN WATER TEMP, °F	245	245	248	240	248	248	247	
ECON OUT WATER TEMP, °F	266	269	268	270	270	270	270	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 15

OXYGEN, %	—		—		—		—	
OPACITY, %	—		—		—		—	
SO_2, PPM	—		—		—		—	
DRUM LEVEL CONTROL	1.5	1.0	0.5	0.5	0.5	0.5	0	
FEEDWATER CONTROL	72	70	75	73	73	73	74	
FURNACE PRESSURE CONTROL	-0.3	-0.2	-0.2	-0.3	-0.2	-0.4	-0.3	
FD FAN DAMPER CONTROL	64	70	72	68	76	79	81	
AIR FLOW CONTROL	59	60	59	68	66	69	71	
STEAM/AIR RATIO CONTROL	74	72	75	72	72	74	76	
OVERFIRE AIR VANCE CONTROL	46	46	46	46	46	46	46	
BOILER SUBMASTER	55	97	91	93	86	88	84	
PLANT MASTER	179	181	183	183	182	182	180	
FRONT UPPER OFA PRESS, "H_2O	8	8	8	8	8	8	8	
FRONT LOWER OFA PRESS, "H_2O	6	5.5	5.5	5.5	5.5	5.5	5.5	
REAR UPPER OFA PRESS, "H_2O	25	25	25	25	25	25	25	
REAR LOWER OFA PRESS, "H_2O	28	28	28	28	28	28	28	
BLR HPR REINJECTION PRESS, "H_2O	7	6	7	6	6	6	6	
MECH HPR REINJECTION PRESS, "H_2O	4	4	5	5	5	5	5	
GRATE SPEED SETTING (left/right)	5/6	5.8/7	6/7	6.1/7	5.7/5.6	5.6/5.6	5.6/5.6	

REMARKS: SASS, SO_2, Part at BLR OUT and ESP OUT

Coal Designation: Reload

lb/hr Steam: 177,360

lb/hr Coal: 19,200

lb/hr Feedwater: 184,080

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 16

Date: 2/7/78

Page: 1 of 2

TIME OF READING	15:00	15:30	16:00	16:30	17:30	18:30	19:00	19:30	
COAL SCALE A COUNTER x 200 lbs	462356							462356	
COAL SCALE B COUNTER x 200 lbs	442141							442341	
FW FLOW INTEGRATOR x 1000 lbs	732179							722946	
STM FLOW INTEGRATOR x 1000 lbs	618444							619183	
OVERFIRE AIR PRESS, "H_2O	31	32	32	32	31	32	32	32	
FD FAN DISCHARGE PRESS, "H_2O	2.6	2.6	2.6	2.6	2.6	2.5	2.8	2.6	
FURNACE PRESSURE, "H_2O	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2	
GRATE DRAFT, "H_2O	0.4	0.2	0.2	0.3	0.2	0.2	0.2	0.4	
BOILER OUTLET PRESS, "H_2O	-1.6	-1.5	-1.5	-1.6	-1.5	-1.6	-1.6	-1.6	
ECONOMIZER INLET PRESS, "H_2O	-5.6	-5.5	-5.6	-5.8	-5.6	-5.7	-5.7	-5.6	
FD FAN AMPS	77	78	78	78	79	78	78	78	
OFA FAN AMPS	112	112	112	112	114	114	112	114	
ID FAN AMPS	110	111	111	112	112	112	114	112	
DRUM PRESSURE, psig	208	210	210	210	207	210	206	210	
FW PRESSURE, psig	275	277	275	275	275	275	274	275	
STEAM HEADER PRESSURE, psig	185	185	190	190	185	190	185	186	
FW FLOW x 1000 lb/hr	188	185	180	185	180	184	180	183	
STEAM FLOW x 1000 lb/hr	182	182	185	183	185	177	183	182	
AIR FLOW, %	83	84	8	83	87	84	87	85	
FD FAN IN TEMP, °F	48		—		—		—		
ECON OUT GAS TEMP, °F	410	410	410	410	410	410	405	410	
STEAM TEMP, °F	560	560	560	570	565	565	560	560	
ECON IN WATER TEMP, °F	242	242	243	240	245	242	243	245	
ECON OUT WATER TEMP, °F	280	280	275	275	280	275	275	278	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 16

OXYGEN, %		6.5		6.8		7.0		7.4	
OPACITY, %	—		—		—		—		
SO_2, PPM	—		—		—		—		
DRUM LEVEL CONTROL	-0.3	0	0	0	0	0	0	0	
FEEDWATER CONTROL	74	72	73	73	73	73	73	74	
FURNACE PRESSURE CONTROL	-0.25	-0.3	-0.35	-0.3	-0.3	-0.3	-0.3	-0.2	
FD FAN DAMPER CONTROL	95	95	94	95	97	97	94	90	
AIR FLOW CONTROL	88	87	87	87	90	87	90	87	
STEAM/AIR RATIO CONTROL	74	75	75	74	77	73	73	72	
OVERFIRE AIR VANCE CONTROL	55	56	56	56	56	56	56	56	
BOILER SUBMASTER	84	84	81	81	86	81	90	86	
PLANT MASTER	183	181	183	181	180	181	181	183	
FRONT UPPER OFA PRESS, "H_2O	8	8	8	8	8	8	8	8	
FRONT LOWER OFA PRESS, "H_2O	5.5	5.5	5.0	5.5	5.0	6.5	5.0	5.0	
REAR UPPER OFA PRESS, "H_2O	29	29	29	29	29	29	29	29	
REAR LOWER OFA PRESS, "H_2O	31	31	31	32	32	31	31	31	
BLR HPR REINJECTION PRESS, "H_2O	7	6	5	7	6	6	5	7	
MECH HPR REINJECTION PRESS, "H_2O	13	13	8	10	12	10	10	9	
GRATE SPEED SETTING (left/right)	4.9/5.6	4.9/5.6	4.9/5.1	4.9/5.1	4.9/5.1	4.9/5.1	4.9/5.0	4.9/5.0	

REMARKS: SASS, SOx + Part at BLR OUT + ESP OUT

Coal Designation: Reload

lb/hr Steam: 176,667

lb/hr Coal: 17,892

lb/hr Feedwater: 180,952

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 17

Date: 2/4/78

Page: 1 of 2

TIME OF READING	10:16	10:57	12:00	13:03	
COAL SCALE A COUNTER x 200 lbs	463521	463551	463549	463645	
COAL SCALE B COUNTER x 200 lbs	443291	443322	442370	443416	
FW FLOW INTEGRATOR x 1000 lbs	736557	736683	736873	737063	
STM FLOW INTEGRATOR x 1000 lbs	622640	622756	622945	623127	
OVERFIRE AIR PRESS, "H_2O	29	29	29	29	
FD FAN DISCHARGE PRESS, "H_2O	2.9	2.0	3.1	2.5	
FURNACE PRESSURE, "H_2O	-0.3	-0.2	-0.2	-0.2	
GRATE DRAFT, "H_2O	+0.3	+0.2	+0.1	+0.3	
BOILER OUTLET PRESS, "H_2O	-1.7	-1.3	-1.8	-1.4	
ECONOMIZER INLET PRESS, "H_2O	-6.3	-4.7	-6.2	-5.4	
FD FAN AMPS	81	74	81	77	
OFA FAN AMPS	114	112	114	113	
DRUM PRESSURE, psig	210	200	210	205	
FW PRESSURE, psig	270	290	290	295	
STEAM HEADER PRESSURE, psig	190	190	190	190	
FW FLOW x 1000 lb/hr	195	170	195	175	
STEAM FLOW x 1000 lb/hr	190	170	195	180	
AIR FLOW, %	55	75	91	80	
FD FAN IN TEMP, °F	53	—	53	—	
ECON OUT GAS TEMP, °F	410	400	406	405	
STEAM TEMP, °F	585	580	585	585	
ECON IN WATER TEMP, °F	245	245	250	250	
ECON OUT WATER TEMP, °F	005	005	005	005	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 17

OXYGEN, % from Truck	6.5	6.7	6.9		
OPACITY, %	12	14	25-30	28-30	
SO_2, PPM	005	005	005	005	
DRUM LEVEL CONTROL	-3	1	-1	0	
FEEDWATER CONTROL	79	64	80	72	
FURNACE PRESSURE CONTROL	-0.3	-.25	-.30	-.3	
FD FAN DAMPER CONTROL	96	89	94	86	
AIR FLOW CONTROL	91	77	93	84	
STEAM/AIR RATIO CONTROL	77	69	78	70	
OVERFIRE AIR VANCE CONTROL	41	12	31	18	
BOILER SUBMASTER	85	70	78	72	
PLANT MASTER	180	180	185	185	
FRONT UPPER OFA PRESS, "H_2O	7.0	8.0	7.5	8.0	
FRONT LOWER OFA PRESS, "H_2O	5.0	6.0	5.5	5.5	
REAR UPPER OFA PRESS, "H_2O	27.0	26.0	26.5	26.5	
REAR LOWER OFA PRESS, "H_2O	29.0	29.0	29.0	29.0	
BLR HPR REINJECTION PRESS, "H_2O	6.0	6.0	7.0	7.0	
MECH HPR REINJECTION PRESS, "H_2O	5.0	5.0	5.0	5.5	
GRATE SPEED SETTING (left/right)	5.0/5.2	5.0/5.2	5.0/5.2	5.0/5.2	

REMARKS: High load w/ fly ash reinjection

Coal Designation: Southeast

lb/hr Steam: 147,533

lb/hr Coal: 15,266

lb/hr Feedwater: 153,373

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 18

Date: 2/17/79

Page: 1 of 2

TIME OF READING	11:01	11:50	12:33	13:05	13:50
COAL SCALE A COUNTER x 200 lbs	467744	467776	467804	467825	467853
COAL SCALE B COUNTER x 200 lbs	447432	447462	447490	447510	447538
FW FLOW INTEGRATOR x 1000 lbs	751952	752077	752188	752270	752384
STM FLOW INTEGRATOR x 1000 lbs	637357	637476	637583	637661	637772
OVERFIRE AIR PRESS, "H_2O	27	28	28	30	
FD FAN DISCHARGE PRESS, "H_2O	1.4	1.3	1.2	1.1	
FURNACE PRESSURE, "H_2O	-0.2	-0.1	-0.2	-0.2	
GRATE DRAFT, "H_2O	+0.1	0	0	0	
BOILER OUTLET PRESS, "H_2O	-1.1	-1.1	-1.1	-0.9	
ECONOMIZER INLET PRESS, "H_2O	-3.6	-4.0	-3.6	-4.5	
FD FAN AMPS	69	69	69	69	
OFA FAN AMPS	109	109	109	109	
DRUM PRESSURE, psig	195	200	200	200	
FW PRESSURE, psig	275	280	280	280	
STEAM HEADER PRESSURE, psig	195	200	200	195	
FW FLOW x 1000 lb/hr	155	155	150	150	
STEAM FLOW x 1000 lb/hr	160	150	150	150	
AIR FLOW, %	67	65	65	65	
FD FAN IN TEMP, °F	57	57	58	58	
ECON OUT GAS TEMP, °F	395	403	295	396	
STEAM TEMP, °F	550	550	550	550	
ECON IN WATER TEMP, °F	245	245	245	245	
ECON OUT WATER TEMP, °F	003	003	003	005	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 18

OXYGEN, %	5.5	6.5	5.5	6.0	
OPACITY, %	8-12	8-11	8-11	8-12	Peak 25
SO_2, PPM	005	005	005	005	
DRUM LEVEL CONTROL	-2	+1	+1	+2	
FEEDWATER CONTROL	61	61	61	60	
FURNACE PRESSURE CONTROL	-0.2	-0.2	-0.2	-0.2	
FD FAN DAMPER CONTROL	81	76	78	25	
AIR FLOW CONTROL	73	66	65	65	
STEAM/AIR RATIO CONTROL	62	62	62	62	
OVERFIRE AIR VANCE CONTROL	11	5	5	0	
BOILER SUBMASTER	71	67	66	64	
PLANT MASTER	180	182	180	181	
FRONT UPPER OFA PRESS, "H_2O	8.0	7.0	7.0	8.0	
FRONT LOWER OFA PRESS, "H_2O	5.0	4.0	4.0	5.0	
REAR UPPER OFA PRESS, "H_2O	26.5	26.0	26.0	26.5	27.0
REAR LOWER OFA PRESS, "H_2O	29.0	29.0	29.0	29.0	30.0
BLR HPR REINJECTION PRESS, "H_2O	6.0	6.0	6.0	6.0	6.5
MECH HPR REINJECTION PRESS, "H_2O	3.0	4.0	3.5	4.0	4.0
GRATE SPEED SETTING (left/right)	5.0/5.0	4.5/4.6	4.5/4.6	4.5/4.6	

REMARKS: Before Ash was taken at about 11:30 to 12:00 SO
O_2 rose to 7.5-8.0% for 20 minutes.
Max. O.F.A.

Coal Designation: Kentucky Cumberland

lb/hr Steam: 150,233

lb/hr Coal: 15,907

lb/hr Feedwater: 154,884

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 19

Date: 2/18/78

Page: 1 of 2

TIME OF READING	9:27	10:13	11:07	11:42	
COAL SCALE A COUNTER x 200 lbs	468271	468300	468335	468361	
COAL SCALE B COUNTER x 200 lbs	447946	447972	448003	448027	
FW FLOW INTEGRATOR x 1000 lbs	753920	754025	754156	754253	
STM FLOW INTEGRATOR x 1000 lbs	639253	639385	639481	639576	
OVERFIRE AIR PRESS, "H_2O	25.0	25.0	25.0	25.0	
FD FAN DISCHARGE PRESS, "H_2O	1.0	1.0	1.0	1.2	
FURNACE PRESSURE, "H_2O	-0.2	-0.3	-0.2	-0.1	
GRATE DRAFT, "H_2O	0	-0.1	0	0	
BOILER OUTLET PRESS, "H_2O	-0.8	-0.8	-0.8	-1.1	
ECONOMIZER INLET PRESS, "H_2O	-4.2	-3.0	-3.1	-3.4	
FD FAN AMPS	66	68	68	69	
OFA FAN AMPS	107	107	107	107	
DRUM PRESSURE, psig	207	200	200	198	
FW PRESSURE, psig	257	260	255	257	
STEAM HEADER PRESSURE, psig	194	193	190	189	
FW FLOW x 1000 lb/hr	150	152	160	150	
STEAM FLOW x 1000 lb/hr	155	150	155	155	
AIR FLOW, %	54	58	60	62	
FD FAN IN TEMP, °F	50	50	50	—	
ECON OUT GAS TEMP, °F	393	392	392	389	
STEAM TEMP, °F	550	550	560	560	
ECON IN WATER TEMP, °F	243	243	243	243	
ECON OUT WATER TEMP, °F	003	003	003	002	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: A

OXYGEN, %	3 5.2	4.5 5.5	4.3 5.0	4.3	
OPACITY, %	8-12	10-12	10-13	10-14	
SO_2, PPM	005	005	005	005	
DRUM LEVEL CONTROL	1	0	2	0	
FEEDWATER CONTROL	60	62	64	62	
FURNACE PRESSURE CONTROL	-.3	-.2	-.2	-.2	
FD FAN DAMPER CONTROL	78	72	71	84	
AIR FLOW CONTROL	65	59	63	70	
STEAM/AIR RATIO CONTROL	66	63	66	70	
OVERFIRE AIR VANCE CONTROL	57	49	48	65	
BOILER SUBMASTER	77	73	73	82	
PLANT MASTER	180	180	182	182	
FRONT UPPER OFA PRESS, "H_2O	8.0	6.0	8.0		
FRONT LOWER OFA PRESS, "H_2O	5.0	5.5	5.0		
REAR UPPER OFA PRESS, "H_2O	24.0	24.0	24.0		
REAR LOWER OFA PRESS, "H_2O	27.0	27.0	27.0		
BLR HPR REINJECTION PRESS, "H_2O	6.5	6.5	6.5		
MECH HPR REINJECTION PRESS, "H_2O	3.5	3.0	5.0		
GRATE SPEED SETTING (left/right)	4.5/4.5	4.5/4.5	4.5/4.5		

REMARKS: low O_2

Coal Designation: Kentucky Cumberland

lb/hr Steam: 145,591

lb/hr Coal: 15,628

lb/hr Feedwater: 150,698

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 20

Date: 2/18/78

Page: 1 of 2

TIME OF READING	13:50	14:43	15:20	15:59	
COAL SCALE A COUNTER x 200 lbs	468413	468448	468481	468498	
COAL SCALE B COUNTER x 200 lbs	448077	448111	448143	448160	
FW FLOW INTEGRATOR x 1000 lbs	754446	754581	754704	754770	
STM FLOW INTEGRATOR x 1000 lbs	639164	639892	640016	640077	
OVERFIRE AIR PRESS, "H_2O	25.0	25	25	25	
FD FAN DISCHARGE PRESS, "H_2O	1.2	1.3	1.3	1.3	
FURNACE PRESSURE, "H_2O	-.2	-.2	0	0	
GRATE DRAFT, "H_2O	0	0	0	0	
BOILER OUTLET PRESS, "H_2O	-1.1	-1.1	-1.0	-1.0	
ECONOMIZER INLET PRESS, "H_2O	-3.6	-3.7	-3.6	-3.8	
FD FAN AMPS	70	72	69	69	
OFA FAN AMPS	107	107	106	100	
DRUM PRESSURE, psig	190	195	195	200	
FW PRESSURE, psig	265	260	255	255	
STEAM HEADER PRESSURE, psig	185	190	200	195	
FW FLOW x 1000 lb/hr	200	165	140	145	
STEAM FLOW x 1000 lb/hr	160	145	150	150	
AIR FLOW, %	66	65	65	67	
FD FAN IN TEMP, °F	54	55	—	—	
ECON OUT GAS TEMP, °F	397	400	395	397	
STEAM TEMP, °F	565	555	555	555	
ECON IN WATER TEMP, °F	243	243	243	242	
ECON OUT WATER TEMP, °F	—	005	005	005	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 20

OXYGEN, %	5.0	6.3	5.7	5.9	
OPACITY, %	10-16	10-16	10-14	9-13	
SO_2, PPM	005	005	002	005	
DRUM LEVEL CONTROL	1	1	1	1	
FEEDWATER CONTROL	70	62	55	62	
FURNACE PRESSURE CONTROL	-.2	-.2	-.25	-.3	
FD FAN DAMPER CONTROL	80	82	75	82	
AIR FLOW CONTROL	67	70	70	70	
STEAM/AIR RATIO CONTROL	67	62	60	63	
OVERFIRE AIR VANCE CONTROL	61	56	50	57	
BOILER SUBMASTER	87	76	74	76	
PLANT MASTER	180	180	180	180	
FRONT UPPER OFA PRESS, "H_2O	8.0	8.0	8.0	8.0	
FRONT LOWER OFA PRESS, "H_2O	5.0	5.0	5.0	5.0	
REAR UPPER OFA PRESS, "H_2O	24.0	27.0	22.5	22.5	
REAR LOWER OFA PRESS, "H_2O	27.5	27.0	27.0	27.0	
BLR HPR REINJECTION PRESS, "H_2O	6.0	6.0	6.0	6.0	
MECH HPR REINJECTION PRESS, "H_2O	5.0	5.0	5.0	5.0	
GRATE SPEED SETTING (left/right)	4.5/4.5	4.5/4.5	4.5/4.5	4.5/4.5	

REMARKS: Normal Ops

Coal Designation: Hatfield

lb/hr Steam: 145,652

lb/hr Coal: 15,739

lb/hr Feedwater: 151,739

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 21

Date: 2/20/78

Page: 1 of 2

TIME OF READING	10:03	10:56	11:30	12:21	
COAL SCALE A COUNTER x 200 lbs	469246	469381	469407	469459	
COAL SCALE B COUNTER x 200 lbs	449042	449077	449099	449130	
FW FLOW INTEGRATOR x 1000 lbs	757975	758109	758199	758324	
STM FLOW INTEGRATOR x 1000 lbs	643127	643257	643343	643462	
OVERFIRE AIR PRESS, "H_2O	24	25	25		
FD FAN DISCHARGE PRESS, "H_2O	2.2	1.8	2.4		
FURNACE PRESSURE, "H_2O	-.3	-.2	-.6		
GRATE DRAFT, "H_2O	+.3	+.3	0		
BOILER OUTLET PRESS, "H_2O	-1.3	-1.3	-2.3		
ECONOMIZER INLET PRESS, "H_2O	-4.8	-4.2	-6.0		
FD FAN AMPS	75	73	76		
OFA FAN AMPS	106	103	108		
DRUM PRESSURE, psig	200	200	200		
FW PRESSURE, psig	285	280	285		
STEAM HEADER PRESSURE, psig	190	190	200		
FW FLOW x 1000 lb/hr	150	160	160		
STEAM FLOW x 1000 lb/hr	150	150	160		
AIR FLOW, %	74	70	70		
FD FAN IN TEMP, °F	49	48	50		
ECON OUT GAS TEMP, °F	400	402	405		
STEAM TEMP, °F	555	555	555		
ECON IN WATER TEMP, °F	245	245	245		
ECON OUT WATER TEMP, °F	003	270	270		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 21

OXYGEN, %	6	6.5	5.5		
OPACITY, %	15	12	9-12		
SO_2, PPM	00s	00s	00s		
DRUM LEVEL CONTROL	1	0	-1		
FEEDWATER CONTROL	59	64	64		
FURNACE PRESSURE CONTROL	-.4	-.2	-1		
FD FAN DAMPER CONTROL	81	79	78		
AIR FLOW CONTROL	77	72	75		
STEAM/AIR RATIO CONTROL	64	76	59		
OVERFIRE AIR VANCE CONTROL	78	62	60		
BOILER SUBMASTER	88	80	81		
PLANT MASTER	182	182	180		
FRONT UPPER OFA PRESS, "H_2O	8.0	8.0	8.0		
FRONT LOWER OFA PRESS, "H_2O	5.0	5.0	5.0		
REAR UPPER OFA PRESS, "H_2O	23.5	23.5	23.5		
REAR LOWER OFA PRESS, "H_2O	26.5	26.5	26.5		
BLR HPR REINJECTION PRESS, "H_2O	6.0	6.0	6.0		
MECH HPR REINJECTION PRESS, "H_2O	4.5	4.0	5.0		
GRATE SPEED SETTING (left/right)	4/5.5	4.5/4.5	4.5/4.5		

REMARKS: Max. OFA

Coal Designation: Hatfield

lb/hr Steam: 113,607

lb/hr Coal: 16,121

lb/hr Feedwater: 50,984

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 2

Date: 2/20/78

Page: 1 of 2

TIME OF READING	14:13	15:35	15:49	16:25	
COAL SCALE A COUNTER x 200 lbs	469488	469530	469557	469571	
COAL SCALE B COUNTER x 200 lbs	449187	449230	449247	449262	
FW FLOW INTEGRATOR x 1000 lbs	758511	758668	758767	758818	
STM FLOW INTEGRATOR x 1000 lbs	642649	643791	643886	643926	
OVERFIRE AIR PRESS, "H_2O	5.0	5.0	5.0		
FD FAN DISCHARGE PRESS, "H_2O	2.1	2.0	1.7		
FURNACE PRESSURE, "H_2O	-.1	-.1	-.1		
GRATE DRAFT, "H_2O	-.3	-.2	-.2		
BOILER OUTLET PRESS, "H_2O	-1.2	-1.4	-1.2		
ECONOMIZER INLET PRESS, "H_2O	-4.0	-4.0	-4.3		
FD FAN AMPS	71	72	69		
OFA FAN AMPS	87	86	87		
DRUM PRESSURE, psig	190	191	192		
FW PRESSURE, psig	275	280	280		
STEAM HEADER PRESSURE, psig	190	190	190		
FW FLOW x 1000 lb/hr	150	155	150		
STEAM FLOW x 1000 lb/hr	155	150	150		
AIR FLOW, %	72	72	72		
FD FAN IN TEMP, °F	--	56	58		
ECON OUT GAS TEMP, °F	395	395	—		
STEAM TEMP, °F	550	555	550		
ECON IN WATER TEMP, °F	243	243	243		
ECON OUT WATER TEMP, °F	505	500	500		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 22

OXYGEN, %	5.5	5.5	5.0		
OPACITY, %	8-12	9-14	8-15		
SO_2, PPM	0.03	0.03	0.03		
DRUM LEVEL CONTROL	0	0	2		
FEEDWATER CONTROL	70	60	59		
FURNACE PRESSURE CONTROL	-.5	-.5	-.3		
FD FAN DAMPER CONTROL	73	70	84		
AIR FLOW CONTROL	73	74	75		
STEAM/AIR RATIO CONTROL	66	62	66		
OVERFIRE AIR VANCE CONTROL	52	82	80		
BOILER SUBMASTER	77	59	51		
PLANT MASTER	133	117	176		
FRONT UPPER OFA PRESS, "H_2O	8.0	8.0	8.0		
FRONT LOWER OFA PRESS, "H_2O	5.0	5.0	5.0		
REAR UPPER OFA PRESS, "H_2O	5.5	5.0	5.0		
REAR LOWER OFA PRESS, "H_2O	10.0	10.0	10.5		
BLR HPR REINJECTION PRESS, "H_2O	6.0	6.0	6.0		
MECH HPR REINJECTION PRESS, "H_2O	5.0	5.0	8.0		
GRATE SPEED SETTING (left/right)	4.5/4.5	4.5/4.5	4.5/4.5		

REMARKS: Min O.F.A.

Coal Designation: Kentucky (Cumberland)

lb/hr Steam: 197,863

lb/hr Coal: 21,618

lb/hr Feedwater: 195,573

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 23

Date: 3/22/78

Page: 1 of 2

TIME OF READING	11.12	12:11	12:54	13:27	
COAL SCALE A COUNTER x 200 lbs	470464	470520	470580	470586	
COAL SCALE B COUNTER x 200 lbs	450172	450224	450262	450286	
FW FLOW INTEGRATOR x 1000 lbs	762113	762705	762447	762579	
STM FLOW INTEGRATOR x 1000 lbs	647058	647224	647395	647490	
OVERFIRE AIR PRESS, "H_2O	27.5	30	30		
FD FAN DISCHARGE PRESS, "H_2O	3.6	3.2	3.2		
FURNACE PRESSURE, "H_2O	0	-.1	-.2		
GRATE DRAFT, "H_2O	-1.4	-0.7	-0.6		
BOILER OUTLET PRESS, "H_2O	-1.8	-1.7	-1.8		
ECONOMIZER INLET PRESS, "H_2O	-6.5	-6.0	-6.2		
FD FAN AMPS	53	52	54		
OFA FAN AMPS	109	112	112		
DRUM PRESSURE, psig	195	192	190		
FW PRESSURE, psig	290	290	290		
STEAM HEADER PRESSURE, psig	200	195	190		
FW FLOW x 1000 lb/hr	240	200	200		
STEAM FLOW x 1000 lb/hr	200	200	205		
AIR FLOW, %	92	92	94		
FD FAN IN TEMP, °F	49	51	51		
ECON OUT GAS TEMP, °F	410	410	415		
STEAM TEMP, °F	580	500	580		
ECON IN WATER TEMP, °F	240	240	240		
ECON OUT WATER TEMP, °F	305	312	320		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 23

OXYGEN, %	5.0	6.0	5.5		
OPACITY, %	10-12	8	8		
SO_2, PPM	003	003	003		
DRUM LEVEL CONTROL	6	2	1		
FEEDWATER CONTROL	80	76	78		
FURNACE PRESSURE CONTROL	-.4	-2	+.25		
FD FAN DAMPER CONTROL	100+	100+	100+		
AIR FLOW CONTROL	98	97	98		
STEAM/AIR RATIO CONTROL	80	55	82		
OVERFIRE AIR VANCE CONTROL	98	79	79		
BOILER SUBMASTER	100+	88	83		
PLANT MASTER	183	173	176		
FRONT UPPER OFA PRESS, "H_2O	8	8.5	8.5		
FRONT LOWER OFA PRESS, "H_2O	5	5.0	5.0		
REAR UPPER OFA PRESS, "H_2O	25.5	28.5	28.5		
REAR LOWER OFA PRESS, "H_2O	28	21.5	31.0		
BLR HPR REINJECTION PRESS, "H_2O	6	6	7		
MECH HPR REINJECTION PRESS, "H_2O	2	0	0		
GRATE SPEED SETTING (left/right)	6/6	6/6	6/6		

REMARKS: No flash reinjection

Coal Designation: Sub-Bituminous

lb/hr Steam: 167,500

lb/hr Coal: 23,920

lb/hr Feedwater: 201,546

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 24

Date: 5/2/78

Page: 1 of 2

TIME OF READING	11:30 12:15	12:28	14:33	15:31	16:42
COAL SCALE A COUNTER x 200 lbs	454247				454529
COAL SCALE B COUNTER x 200 lbs	474610				474940
FW FLOW INTEGRATOR x 1000 lbs	777090				778137
STM FLOW INTEGRATOR x 1000 lbs	661465				662492
OVERFIRE AIR PRESS, "H_2O	3 35	35	35	37	34
FD FAN DISCHARGE PRESS, "H_2O	2.7 2.8	2.8	2.5	2.5	2.6
FURNACE PRESSURE, "H_2O	-.2 -.1	-.2	0	-.1	-.2
GRATE DRAFT, "H_2O	+.5 +.5	+.6	+.5	+.4	+.3
BOILER OUTLET PRESS, "H_2O	-1.7 -1.6	-1.6	-1.4	-1.4	-1.5
ECONOMIZER INLET PRESS, "H_2O	-5.7 -5.7	-5.8	-5.8	-5.4	-5.6
FD FAN AMPS	78 79	79	77	76	77
OFA FAN AMPS	112 112	113	112	112	112
DRUM PRESSURE, psig	215	215	215	215	220
FW PRESSURE, psig	272 270	275	285	283	283
STEAM HEADER PRESSURE, psig	197	197	192	190	192
FW FLOW x 1000 lb/hr	200 205	250	200	200	200
STEAM FLOW x 1000 lb/hr	205 205	210	205	200	202
AIR FLOW, %	85 85	87	87	83	82
FD FAN IN TEMP, °F	58	58		59	
ECON OUT GAS TEMP, °F	405 405	400	400	393	392
STEAM TEMP, °F	565 570	570	570	572	571
ECON IN WATER TEMP, °F	245 245	245	245	245	245
ECON OUT WATER TEMP, °F	320 320	318	325	322	322

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 2-1

OXYGEN, %	5.8	5.1	2.8	3.7	4.0	3.9
OPACITY, %	—		—	—	—	—
SO_2, PPM						—
DRUM LEVEL CONTROL	0	3	-2	-5	0	0
FEEDWATER CONTROL	90	80	86	78	80	83
FURNACE PRESSURE CONTROL	-.3	-.2	-.23	-.25	-.3	-.4
FD FAN DAMPER CONTROL	70	65	100	100	90	83
AIR FLOW CONTROL	87	82	90	89	85	83
STEAM/AIR RATIO CONTROL		84	89	86	82	80
OVERFIRE AIR VANCE CONTROL	20	20	20	20	20	20?
BOILER SUBMASTER	78	87	94	93	83	72
PLANT MASTER	180	183	179	176	180	180
FRONT UPPER OFA PRESS, "H_2O	5	5.5	5.0	5.0	5.0	—
FRONT LOWER OFA PRESS, "H_2O	5	5	5	5	5	—
REAR UPPER OFA PRESS, "H_2O	31	[illegible]	31.5	31	20.5	—
REAR LOWER OFA PRESS, "H_2O	27	22.0	22.0	33	22.5	—
BLR HPR REINJECTION PRESS, "H_2O	8.4	2.8	2.5	10.5	10.0	—
MECH HPR REINJECTION PRESS, "H_2O	7	9	10	7.0	7.0	—
GRATE SPEED SETTING (left/right)	2.7/0	0/0.0	0.0/0.0	10.5/0.0	10.5/0.0	—

REMARKS: 11:30 to 12:30 Particle sizing, & 14:00/16:42 Re-to SPK out & Mech out. Ash failure.

KVB

NOTES

Test 24 Site B

TEST NO: 10:25 requested load increase. #14 ~ 100, #10 ~ 235.

10:30 Mech. reinj. lines L to R: 1-warm, 2-warm, 3-cold, 4-cold, 5-hot, 6-cold, 7-cold

10:30 Elr. reinj. lines L to R: 1 → 6 warm to hot all OK by view glass.

We discovered the other day that the reinjection air butterfly valve for the mech. hopper was installed very misleadingly so that it is open when oriented and

TEST NO: closed when oriented. When wide open as much as 40" H_2O can be had.

grate speed 10.5/10 raised due to thick ash bed at 13:15

Ashes Pulled at:

L 14:33 14:27 14:07 13:52 R

TEST NO: 14:36 told Russ P. to start pulling particulates

14:58 Ash bed now cleaner arch by 2". Ash had been within ½" of arch at 13:00.

15:39 Mech reinj lines 1-3 hot 4-7 cold.

NOTE OFA motor 460 volt 100 hp 113 amps RPM 1770 3 phase 60 cycle

TEST NO: FD motor 460 volt 100 hp 122 amps 880 RPM 3 phase 60 cycle

load reduced at 6:00 pm

TEST NO:

Coal Designation: [illegible]

lb/hr Steam: [illegible]

lb/hr Coal: [illegible]

lb/hr Feedwater: [illegible]

PANEL BOARD DATA
ABMA TEST SITE B

Test No. [illegible]

Date: [illegible]

Page: 1 of 2

TIME OF READING	10:12	11:45	12:41	14:54	15:22
COAL SCALE A COUNTER x 200 lbs	455771	455042	455100	455229	455277
COAL SCALE B COUNTER x 200 lbs	475368	475430	475424	475545	475626
FW FLOW INTEGRATOR x 1000 lbs	779799	780047	780240	780495	780829
STM FLOW INTEGRATOR x 1000 lbs	664001	664303	664491	664936	665062
OVERFIRE AIR PRESS, "H_2O	34	33	32	28	22.5
FD FAN DISCHARGE PRESS, "H_2O	2.4	2.4	2.2	2.8	2.4
FURNACE PRESSURE, "H_2O	-0.2	-0.2	-0.2	-0.2	-0.2
GRATE DRAFT, "H_2O	1.75	1.3	1.4	1.3	[illegible]
BOILER OUTLET PRESS, "H_2O	-1.1	-1.5	-1.25	-1.7	-1.6
ECONOMIZER INLET PRESS, "H_2O	-6.2	-5.2	-6.2	-6.0	-5.4
FD FAN AMPS	52	72	72	50	76
OFA FAN AMPS	110	110	108	110	110
DRUM PRESSURE, psig	210	212	205	215	215
FW PRESSURE, psig	272	282	280	282	280
STEAM HEADER PRESSURE, psig	182	182	188	180	185
FW FLOW x 1000 lb/hr	200	205	206	[illegible]	208
STEAM FLOW x 1000 lb/hr	205	205	201	203	205
AIR FLOW, %	42	53	53	54	52
FD FAN IN TEMP, °F			—	62	—
ECON OUT GAS TEMP, °F	410	402	405	420	415
STEAM TEMP, °F	530	522	530	535	530
ECON IN WATER TEMP, °F	245	242	247	245	245
ECON OUT WATER TEMP, °F	320	325	325	325	322

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 25

OXYGEN, %	4.0	3.2	4.0	3.8	3.5
OPACITY, %		—	—	—	—
SO_2, PPM	—	—	—	—	—
DRUM LEVEL CONTROL	.5	1	.5	2	0
FEEDWATER CONTROL	86	81	80	81	82
FURNACE PRESSURE CONTROL	-.25	-.25	-.3	-.3	-.3
FD FAN DAMPER CONTROL	100+	100	94	100	93
AIR FLOW CONTROL	95	89	86	98	84
STEAM/AIR RATIO CONTROL	83	86	83	87	83
OVERFIRE AIR VANCE CONTROL	26	20	10	20	20
BOILER SUBMASTER	75	83	85	74	75
PLANT MASTER	180	175	178	180	175
FRONT UPPER OFA PRESS, "H_2O	8	8	8	8	8
FRONT LOWER OFA PRESS, "H_2O	5	5	5	5	5
REAR UPPER OFA PRESS, "H_2O	30.5	30	28.5	30	33
REAR LOWER OFA PRESS, "H_2O	32.5	32	31	32	24.5
BLR HPR REINJECTION PRESS, "H_2O	6.0	7.0	7.0	7	7.0
MECH HPR REINJECTION PRESS, "H_2O	5.5	5.5	6	6.8	7.5
GRATE SPEED SETTING (left/right)	7/7	9/10	9/9	7/26	

REMARKS: 10:32 - 12:41 Pert. BLR + Mech Out
14:54 - 15:32 SASS Cyclone & Brink for sizing.

KVB

NOTES

TEST NO: 25 Reached load at about 10:15. Told crew they could start testing at 10:20. Distributor Volts (Feeders) 46, 44, 40, 28, 33 L to R (Front to back) Ash bed about 3" thick. There is some clinkering on far right side of boiler. This is normal. Mesh rising. Hot: 1, 2, 3, 4, 7 (Facing back to front) Cold: 5, 6. Bk rising all OK. It has been noted that reinjection from right most bk hopper line is much

TEST NO: heavier than others. This may be reason for clinkering on that side. Operator explained that coal falls the R side of bunker first & that this side gets the most fines. These fines are carried to the ~~fe~~ side of boiler that clinkers up the most. Right side of boiler has much higher superheaters than left side, this may also affect clinkering & high reinjection.

TEST NO: on that side. Yesterday's coal (test 24) had a lot of junk in it such as rags etc. Mesh rising 5 & 7 cold, others hot (back to front). 12:20 finished particulates & smoke spot. 12:24 began pulling bottom ash (it is up to doors on hopper).

Started pulling bottom ash at 12:25

TEST NO: finished at 13:15

We had a delay in startup because of a vacuum loss on one of the turbines. This did not reduce the load any. 14:54 testing resumed. 15:11 B Mesh rising 4567 Hot 1234 Cold (back to front). Ash bed ~3". 15:40 it was discovered that one of the feeder buses had sheared, the

TEST NO: one on the far left. We have about 10 min of testing left. This is the same side as our B smoke test.

Final Integrator Readings 15:56 FW 780911, STM 665144, Coal 455300, 475647

15:57, told operator he could drop load boiler down

Bottom ash 10½" below door bolts at 16:00. / 1 bl ash 189 lb 3" from top.

Coal Designation: Hatfield

lb/hr Steam: 198,000

lb/hr Coal: 21,560

lb/hr Feedwater: 203,485

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 26

Date: 3/5/78

Page: 1 of 2

TIME OF READING	10:34 11:40	12:48	15:31		17:10
COAL SCALE A COUNTER x 200 lbs	456342				456672
COAL SCALE B COUNTER x 200 lbs	476672				477050
FW FLOW INTEGRATOR x 1000 lbs	784662				786005
STM FLOW INTEGRATOR x 1000 lbs	668651				669958
OVERFIRE AIR PRESS, "H_2O	35 32	32	31	31	
FD FAN DISCHARGE PRESS, "H_2O	3.6 2.8	2.6	2.5	2.5	
FURNACE PRESSURE, "H_2O	-0.2 -.2	-.2	-.2	-.2	
GRATE DRAFT, "H_2O	+.8 +.6	+.4	+.3	+.3	
BOILER OUTLET PRESS, "H_2O	-2 -1.7	-1.5	-1.5	-1.5	
ECONOMIZER INLET PRESS, "H_2O	-7 -5.8	-5.5	-5.5	-5.4	
FD FAN AMPS	85 80	78	77	77	
OFA FAN AMPS	116 114	112	112	112	
DRUM PRESSURE, psig	220 215	210	215	215	
FW PRESSURE, psig	276 275	278	277	277	
STEAM HEADER PRESSURE, psig	195 195	180	190	185	
FW FLOW x 1000 lb/hr	205 205	200	205	205	
STEAM FLOW x 1000 lb/hr	205 204	200	205	205	
AIR FLOW, %	95 85	83	82	82	
FD FAN IN TEMP, °F	56	58	62	62	
ECON OUT GAS TEMP, °F	406 401	410	404	400	
STEAM TEMP, °F	564 570	570	570	567	
ECON IN WATER TEMP, °F	245 245	245	245	245	
ECON OUT WATER TEMP, °F	323 320	318	315	316	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 26

OXYGEN, %	6	4.5	5.5	3.5	3.5	
OPACITY, %			–			
SO_2, PPM	–		–	–	–	–
DRUM LEVEL CONTROL	0	0	0	0	0	
FEEDWATER CONTROL	85	82	80	81	83	
FURNACE PRESSURE CONTROL	-.4	-.3	-.3	-.2	-.3	
FD FAN DAMPER CONTROL	100+	90m	82m	92m	92m	
AIR FLOW CONTROL	100	87	85	84	84	
STEAM/AIR RATIO CONTROL	81	83	80	82	84	
OVERFIRE AIR VANCE CONTROL	20	(55) 10	10 (55)	10 (55)	55	
BOILER SUBMASTER	60	65	80	88	85	
PLANT MASTER	120	180	180	180	180	
FRONT UPPER OFA PRESS, "H_2O	8.5	8	8	8	8	
FRONT LOWER OFA PRESS, "H_2O	5/5	5/5	5/5	5/5	5/5	
REAR UPPER OFA PRESS, "H_2O	31.5	28.5	29	28.5	28.5	
REAR LOWER OFA PRESS, "H_2O	33.5	31.5	31.5	31.5	31	
BLR HPR REINJECTION PRESS, "H_2O	7	7	7	7	7	
MECH HPR REINJECTION PRESS, "H_2O	9	8.5	11	8.7	9	
GRATE SPEED SETTING (left/right)	6.8/20	→	17.0	6.8/7.0	6.8/20	

REMARKS: Part Mech + Bfr out 10:34-12:48
Part Sizing from 15:31 - 17:10

KVB

NOTES

TEST NO: Testing started at 10:30 after some clinkering problems at low load. As soon as load was increased the clinkering went away. We are currently at (10:50) 7% O_2 and have requested that the air be dropped. We were running this high because of the clinkering problem but it now looks OK to drop air.

TEST NO: Started raising load at 9:45.
Mesh reinjection lines 2, 5, 6, 7 (back to front) are hot at 12:58. At start of test all but #4 were hot. No clinker formation as yet. This test, both end blr hpr reinj lines are very heavy. Finished particulate testing at 1:00 pm. Ash will be pulled at 1:30 because ash

TEST NO: pullers are blowing soot on boiler #10 at the moment.
NOTE. Boiler has a split plenum. 14:25 left side of ash hopper has been pulled. 14:55 estimated ash up to top of ash pulling doors.
Finished Ash Pulling at 15:13 with an estimated 1 - 1½ feet as ash left in bottom of hopper. 15:42 Ash bed 2½ - 3½" thick with

TEST NO: clinkering on right edge. All mesh hopper lines hot except #4.

Last Integrator readings — time - [redacted] 17:10

Coal Scale A	456672	21,563 lbs/hr	
Coal Scale B	477050		
FW FLOW	786005		
Steam flow	669958	198,030 lbs/hr	99.0%

TEST NO: Ash Pit estimated 24" below window at 17:05 or 22" below bolts
barrel of ash weighed - 175 lbs gross = 158 lbs ash
dimensions of barrel - height = 27.5", 21.25" - diameter

Coal Designation: Kentucky Competition

lb/hr Steam: 158,769

lb/hr Coal: 16,052

lb/hr Feedwater: 126,700

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 37

Date: 5/9/78

Page: 1 of 2

TIME OF READING	9:50	10:31	10:09	11:37	12:00
COAL SCALE A COUNTER x 200 lbs	479061	479091	479119	479140	479156
COAL SCALE B COUNTER x 200 lbs	458458	458483	458508	458523	458537
FW FLOW INTEGRATOR x 1000 lbs	793154	793398	793604	793479	793643
STM FLOW INTEGRATOR x 1000 lbs	676761	676868	676970	677043	677105
OVERFIRE AIR PRESS, "H_2O	25	30	30	30	
FD FAN DISCHARGE PRESS, "H_2O	1.8	1.8	1.8	1.8	
FURNACE PRESSURE, "H_2O	-.2	-.2	-.2	-.2	
GRATE DRAFT, "H_2O	+.3	+.3	+.3	+.2	
BOILER OUTLET PRESS, "H_2O	-1.2	-1.3	-1.2	-1.3	
ECONOMIZER INLET PRESS, "H_2O	-3.8	-4.2	4.2	4.2	
FD FAN AMPS	71	72	73	73	
OFA FAN AMPS	107	109	110	110	
DRUM PRESSURE, psig	190	190	190	190	
FW PRESSURE, psig	260	285	287	287	
STEAM HEADER PRESSURE, psig	190	188	185	190	
FW FLOW x 1000 lb/hr	150	165	160	165	
STEAM FLOW x 1000 lb/hr	160	160	165	165	
AIR FLOW, %	70	71	72	72	
FD FAN IN TEMP, °F	65	69	66	65	
ECON OUT GAS TEMP, °F	375	395	395	395	
STEAM TEMP, °F	540	560	560	560	
ECON IN WATER TEMP, °F	245	248	210	249	
ECON OUT WATER TEMP, °F	240	312	312	312	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 27

OXYGEN, %	5.7	5.5	5.5	6.0	
OPACITY, %	12-20	10 14	8 10	7	
SO_2, PPM	200 ?	200	200	200	
DRUM LEVEL CONTROL	-6	+.5	+1	0	
FEEDWATER CONTROL	68	65	60	66	
FURNACE PRESSURE CONTROL	-.4	-.25	-.3	-.4	
FD FAN DAMPER CONTROL	84	83	83	79	
AIR FLOW CONTROL	73	73	74	73	
STEAM/AIR RATIO CONTROL	65	66	66	65	
OVERFIRE AIR VANCE CONTROL	31	40	39	35	
BOILER SUBMASTER	60	66	65	64	
PLANT MASTER	179	180	181	181	
FRONT UPPER OFA PRESS, "H_2O	8.0	8.0	8.0	8.0	
FRONT LOWER OFA PRESS, "H_2O	5/5	5/5	5/5.5	5/5	
REAR UPPER OFA PRESS, "H_2O	23.0	27.0	28.0	28.0	
REAR LOWER OFA PRESS, "H_2O	27.0	30.0	30.0	30.0	
BLR HPR REINJECTION PRESS, "H_2O	7±2	7±2	7±2	7±2	
MECH HPR REINJECTION PRESS, "H_2O	8.0	8.0	8.0	8.0	
GRATE SPEED SETTING (left/right)	4.5/4.5	4.8/4.8	4.8/4.8	4.8/4.8	

REMARKS: 27. OFA was raised to 30" right after first set of control room readings (10:00)
Ash level 1½" to 2"

Coal Designation: Kentucky Cumberland

lb/hr Steam: 161,739

lb/hr Coal: 16,696

lb/hr Feedwater:

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 28

Date: 3/9/78

Page: 1 of 2

TIME OF READING	14:38	15:21	15:50	16:15	16:33
COAL SCALE A COUNTER x 200 lbs	479217	479242	479268	479283	479296
COAL SCALE B COUNTER x 200 lbs	458548	458628	458649	458666	458679
FW FLOW INTEGRATOR x 1000 lbs	793798	793910	793990	794058	794160
STM FLOW INTEGRATOR x 1000 lbs	677342	677459	677527	677602	677652
OVERFIRE AIR PRESS, "H_2O	25	25	26	26	
FD FAN DISCHARGE PRESS, "H_2O	1.8	1.8	2.0	2.0	
FURNACE PRESSURE, "H_2O	-0.2	-.2	-.1	-0.2	
GRATE DRAFT, "H_2O	+.3	+.2	+.3	+.4	
BOILER OUTLET PRESS, "H_2O	-1.0	-1.2	-1.3	-1.4	
ECONOMIZER INLET PRESS, "H_2O	-4.2	-4.2	-4.3	-4.4	
FD FAN AMPS	74	73	74	74	
OFA FAN AMPS	114	114	114	114	
DRUM PRESSURE, psig	190	190	192	192	
FW PRESSURE, psig	295	290	295	295	
STEAM HEADER PRESSURE, psig	190	190	192	192	
FW FLOW x 1000 lb/hr	155	165	167	165	
STEAM FLOW x 1000 lb/hr	165	165	167	167	
AIR FLOW, %	72	72	72	72	
FD FAN IN TEMP, °F	70	70	69	69	
ECON OUT GAS TEMP, °F	390	390	390	390	
STEAM TEMP, °F	560	550	550	550	
ECON IN WATER TEMP, °F	248	250	247	247	
ECON OUT WATER TEMP, °F	315	313	312	311	

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 2 D

OXYGEN, %	5.5	4.8	4.8	4.5	
OPACITY, %	7	7	7	7	
SO_2, PPM	250	250	250	250	
DRUM LEVEL CONTROL	0	0	-.1	0	
FEEDWATER CONTROL	64	62	67	67	
FURNACE PRESSURE CONTROL	-.3	-.35	-.35	-.30	
FD FAN DAMPER CONTROL	81	85	83	83	
AIR FLOW CONTROL	75	74	75	73	
STEAM/AIR RATIO CONTROL	68	68	67	67	
OVERFIRE AIR VANCE CONTROL	60	70	69	58	
BOILER SUBMASTER	74	52	80	75	
PLANT MASTER	178	180	181	185	
FRONT UPPER OFA PRESS, "H_2O	8.0	8.0	8.0	8.0	
FRONT LOWER OFA PRESS, "H_2O	20/20	20/19	20/19	20/19	
REAR UPPER OFA PRESS, "H_2O	25.0	24.0	24.0	24.0	
REAR LOWER OFA PRESS, "H_2O	27.5	27.0	27.0	27.0	
BLR HPR REINJECTION PRESS, "H_2O	7±2	7±2	7±2	7±2	
MECH HPR REINJECTION PRESS, "H_2O	7.0	7.0	7.0	7.0	
GRATE SPEED SETTING (left/right)	4.4/4.4	5.5/5.5	5.5/5.5	5.5/5.5	

REMARKS: Front lower OFA set at 20", upper OFA. left/right set higher than 8"
Ash bed 1½ - 2"

Coal Designation: Kentucky (Underbed)

lb/hr Steam: 158,537

lb/hr Coal:

lb/hr Feedwater:

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 29

Date: 3/16/78

Page: 1 of 2

TIME OF READING	11:22	12:32	13:25		
COAL SCALE A COUNTER x 200 lbs	482957	483007	483057		
COAL SCALE B COUNTER x 200 lbs	462204	462251	462240		
FW FLOW INTEGRATOR x 1000 lbs	807270	807465	807609		
STM FLOW INTEGRATOR x 1000 lbs	690377	690562	690702		
OVERFIRE AIR PRESS, "H_2O	27	27	27		
FD FAN DISCHARGE PRESS, "H_2O	2.1	1.8	1.8		
FURNACE PRESSURE, "H_2O	-.2	-.1	-.2		
GRATE DRAFT, "H_2O	+.2	+.2	+.3		
BOILER OUTLET PRESS, "H_2O	-1.6	-1.1	-1.2		
ECONOMIZER INLET PRESS, "H_2O	-3.3	-4.0	-4.0		
FD FAN AMPS	75	72	73		
OFA FAN AMPS	109	109	109		
DRUM PRESSURE, psig	190	190	190		
FW PRESSURE, psig	300	290	290		
STEAM HEADER PRESSURE, psig	185	190	190		
FW FLOW x 1000 lb/hr	180	160	160		
STEAM FLOW x 1000 lb/hr	158	160	165		
AIR FLOW, %	74	68	70		
FD FAN IN TEMP, °F	68	68			
ECON OUT GAS TEMP, °F	412	298	402		
STEAM TEMP, °F	550	552	555		
ECON IN WATER TEMP, °F	247	248	247		
ECON OUT WATER TEMP, °F	[illegible]	309	307		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 24

OXYGEN, %	7.0	5.0	5.5		
OPACITY, %	8-10	7-8	7-10		
SO_2, PPM	260	300-	300		
DRUM LEVEL CONTROL	0	1	1		
FEEDWATER CONTROL	76	64	62		
FURNACE PRESSURE CONTROL	-.3	-.3	-.4		
FD FAN DAMPER CONTROL	77	64	70		
AIR FLOW CONTROL	74	68	72		
STEAM/AIR RATIO CONTROL	69	65	67		
OVERFIRE AIR VANCE CONTROL	80	80	95		
BOILER SUBMASTER	86	85	92		
PLANT MASTER	179	180	181		
FRONT UPPER OFA PRESS, "H_2O	5.0	5.0			
FRONT LOWER OFA PRESS, "H_2O	5/5	5/5			
REAR UPPER OFA PRESS, "H_2O	25.5	25.5			
REAR LOWER OFA PRESS, "H_2O	28.0	28.0			
BLR HPR REINJECTION PRESS, "H_2O	6.5	7			
MECH HPR REINJECTION PRESS, "H_2O	5.0	5.0			
GRATE SPEED SETTING (left/right)	5.5/5.5	5.5/5.5			

REMARKS: Test aborted because unable to pull sample with SASS Train and be Isokinetic at 13:45

Coal Designation: Wheld

lb/hr Steam: 157,429

lb/hr Coal: 16,843

lb/hr Feedwater:

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 30

Date: 3/17/78

Page: 1 of 2

TIME OF READING	11:52	12:50	13:54	15:30	16:32
COAL SCALE A COUNTER x 200 lbs	462849	462592	462939	463008	462053
COAL SCALE B COUNTER x 200 lbs	483638	483678	483721	483285	483327
FW FLOW INTEGRATOR x 1000 lbs	809674	809635	810013	810274	810444
STM FLOW INTEGRATOR x 1000 lbs	692880	692836	693007	693256	693412
OVERFIRE AIR PRESS, "H_2O	28	28	28	28	28
FD FAN DISCHARGE PRESS, "H_2O	1.7	1.7	1.6	1.7	1.4
FURNACE PRESSURE, "H_2O	-.2	-.2	-.2	-.1	-.1
GRATE DRAFT, "H_2O	+.3	+.3	+.3	+.3	+.2
BOILER OUTLET PRESS, "H_2O	-1.2	-1.3	-1.0	-1.3	-1.0
ECONOMIZER INLET PRESS, "H_2O	-4.0	-11.0	-3.8	-4.5	-3.6
FD FAN AMPS	72	73	72	73	69
OFA FAN AMPS	109	109	116	109	109
DRUM PRESSURE, psig	192	192	192	192	192
FW PRESSURE, psig	290	290	290	290	295
STEAM HEADER PRESSURE, psig	192	190	190	191	195
FW FLOW x 1000 lb/hr	160	155	170	160	140
STEAM FLOW x 1000 lb/hr	160	165	150	163	155
AIR FLOW, %	68	70	68	70	62
FD FAN IN TEMP, °F	65	64	64	64	64
ECON OUT GAS TEMP, °F	405	402	405	405	408
STEAM TEMP, °F	555	560	557	553	555
ECON IN WATER TEMP, °F	247	248	248	247	243
ECON OUT WATER TEMP, °F	304	305	305	307	302

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 30

OXYGEN, %	8.5	8.5	9.0	9.0	9.5
OPACITY, %	7-8	7-10	7-9	7	7
SO_2, PPM	240	280	280	285	280
DRUM LEVEL CONTROL	.5	.5	.7	.3	.3
FEEDWATER CONTROL	66	63	67	65	55
FURNACE PRESSURE CONTROL	-.3	-.3	-.3	-.3	-.3
FD FAN DAMPER CONTROL	67	67	69	67	57
AIR FLOW CONTROL	70	72	68	71	64
STEAM/AIR RATIO CONTROL	66	67	67	66	63
OVERFIRE AIR VANCE CONTROL	79	76	75	73	76
BOILER SUBMASTER	84	83	83	83	73
PLANT MASTER	180	182	183	180	177
FRONT UPPER OFA PRESS, "H_2O	8	8	8	8	8
FRONT LOWER OFA PRESS, "H_2O	5/5	5/5	5/5	5/5	5/5
REAR UPPER OFA PRESS, "H_2O	26	26	26	26	26
REAR LOWER OFA PRESS, "H_2O	28	28	28	28	28
BLR HPR REINJECTION PRESS, "H_2O	7±2	7±2	7	7	7
MECH HPR REINJECTION PRESS, "H_2O	8	8	8	8	8
GRATE SPEED SETTING (left/right)	6.5/6.5	6.5/6.5	6.5/6.5	6.5/6.5	6.5/7.0

REMARKS:

KVB

NOTES

Test 30 Site B

TEST NO: about 10:45 the load was brought up to 140, because one pulmonary was taken down. We were ready to test but had to wait for the cool, Capital was loaded in earlier this morning and Hotpoint was ready by 11:45

17:28

TEST NO: Final readings - 463091 } 16,750 lbs/hr
453865
810588
693555 } 156,250 lbs/hr

TEST NO:

TEST NO:

TEST NO:

Coal Designation:

lb/hr Steam:

lb/hr Coal:

lb/hr Feedwater:

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 31

Date: 3/18/78

Page: 1 of 2

TIME OF READING	11:35	12:24	13:27	14:31	15:24
COAL SCALE A COUNTER x 200 lbs	463505	463540	463579	463624	663665
COAL SCALE B COUNTER x 200 lbs	484300	484338	484375	484421	484459
FW FLOW INTEGRATOR x 1000 lbs	812191	812332	812483	812655	812811
STM FLOW INTEGRATOR x 1000 lbs	695040	695177	695322	695491	695642
OVERFIRE AIR PRESS, "H_2O	26	25	25	25	25
FD FAN DISCHARGE PRESS, "H_2O	2.7	1.4	1.2	1.7	1.6
FURNACE PRESSURE, "H_2O	-.1	-.1	-.1	-.1	-.1
GRATE DRAFT, "H_2O	+.1	+.1	-.1	0	0
BOILER OUTLET PRESS, "H_2O	-1.4	-1.1	-1.0	-1.8	-1.3
ECONOMIZER INLET PRESS, "H_2O	-5.0	-3.7	-3.4	-4.0	4.0
FD FAN AMPS	69	70	67	72	71
OFA FAN AMPS	108	107	106	106	106
DRUM PRESSURE, psig	190	190	190	190	190
FW PRESSURE, psig	296	292	292	293	292
STEAM HEADER PRESSURE, psig	180	190	190	193	188
FW FLOW x 1000 lb/hr	150	160	150	160	160
STEAM FLOW x 1000 lb/hr	160	155	150	160	155
AIR FLOW, %	74	66	63	65	68
FD FAN IN TEMP, °F	66	66	68	70	70
ECON OUT GAS TEMP, °F	405	395	395	400	397
STEAM TEMP, °F	550	555	555	560	555
ECON IN WATER TEMP, °F	247	244	247	245	245
ECON OUT WATER TEMP, °F	315	316	317	315	315

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 31

OXYGEN, % ?	12	11.5	12.5	13	17.5
OPACITY, % ?	10	9-10	8-10	8-14	9-11
SO_2, PPM	270	280	240	300	280
DRUM LEVEL CONTROL	-5	+5	+5	+5	0
FEEDWATER CONTROL	60	63	60	71	68
FURNACE PRESSURE CONTROL	-.6	-.2	-.25	-.3	-.35
FD FAN DAMPER CONTROL	69	63	64	62	64
AIR FLOW CONTROL	84	67	65	88	70
STEAM/AIR RATIO CONTROL	64	65	65	66	67
OVERFIRE AIR VANCE CONTROL	61	80	73	82	76
BOILER SUBMASTER	81	86	83	57	84
PLANT MASTER	182	176	175	179	179
FRONT UPPER OFA PRESS, "H_2O	8.0	8.0	8.0	8.0	8.0
FRONT LOWER OFA PRESS, "H_2O	5/5	5/5	5/5	5/5	5/5
REAR UPPER OFA PRESS, "H_2O	23.5	23.0	23.0	23.0	23.0
REAR LOWER OFA PRESS, "H_2O	28.5	26.0	26.0	26.0	26.0
BLR HPR REINJECTION PRESS, "H_2O	7	6.5	6.5	7	7
MECH HPR REINJECTION PRESS, "H_2O	8	8	8	8	8
GRATE SPEED SETTING (left/right)	5.2/4.8	5.2/4.8	5.2/4.8	5.2/5.8	5.2/6.0

REMARKS: SASS + SO_x BLN OUT

KVB

NOTES

Test 31 · Site B

TEST NO:

16:39

TEST NO: Final readings 463712 } 16,154 lbs/hr
484503 }
645820 - 157,947 lbs/hr 77.2%
812994

TEST NO:

TEST NO:

TEST NO:

Coal Designation: Hatfield

lb/hr Steam: 156,000

lb/hr Coal: 16,235

lb/hr Feedwater:

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 2

Date: 3/20/78

Page: 1 of 2

TIME OF READING	11:05	11:36	12:17	12:20	
COAL SCALE A COUNTER x 200 lbs	464600	464621	464647	464656	
COAL SCALE B COUNTER x 200 lbs	485462	485484	485472	485521	
FW FLOW INTEGRATOR x 1000 lbs	816416	816502	816608	816644	
STM FLOW INTEGRATOR x 1000 lbs	699073	699156	699260	699294	
OVERFIRE AIR PRESS, "H_2O	25	25	25		
FD FAN DISCHARGE PRESS, "H_2O	1.8	1.7	1.5		
FURNACE PRESSURE, "H_2O	-.2	-.1	-.1		
GRATE DRAFT, "H_2O	+.3	+.3	+.3		
BOILER OUTLET PRESS, "H_2O	-1.3	-1.2	-1.0		
ECONOMIZER INLET PRESS, "H_2O	-4.6	-3.8	-3.5		
FD FAN AMPS	71	70	69		
OFA FAN AMPS	104	104	104		
DRUM PRESSURE, psig	190	190	190		
FW PRESSURE, psig	285	290	295		
STEAM HEADER PRESSURE, psig	185	185	190		
FW FLOW x 1000 lb/hr	175	165	155		
STEAM FLOW x 1000 lb/hr	155	160	150		
AIR FLOW, %	70	68	67		
FD FAN IN TEMP, °F	78	78	—		
ECON OUT GAS TEMP, °F	400	401	395		
STEAM TEMP, °F	560	560	558		
ECON IN WATER TEMP, °F	210	248	248		
ECON OUT WATER TEMP, °F	310	310	310		

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 32

OXYGEN, %	005	005	005		
OPACITY, %	7-9	7	7		
SO_2, PPM	250	200	240		
DRUM LEVEL CONTROL	1	1	0		
FEEDWATER CONTROL	57	66	63		
FURNACE PRESSURE CONTROL	-.3	-.2	-.05		
FD FAN DAMPER CONTROL	82	69	70		
AIR FLOW CONTROL	82	70	67		
STEAM/AIR RATIO CONTROL	69	68	66		
OVERFIRE AIR VANCE CONTROL	90	90	80		
BOILER SUBMASTER	92	92	67		
PLANT MASTER	175	180	181		
FRONT UPPER OFA PRESS, "H_2O	8	8			
FRONT LOWER OFA PRESS, "H_2O	5/5	5/5			
REAR UPPER OFA PRESS, "H_2O	23	23			
REAR LOWER OFA PRESS, "H_2O	27.5	22.5			
BLR HPR REINJECTION PRESS, "H_2O	7.0	7.0			
MECH HPR REINJECTION PRESS, "H_2O	8.0	8.0			
GRATE SPEED SETTING (left/right)	4.0/3.8	4.0/4.2			

REMARKS: SO_2 at 12LP OUT

HVB

Coal Designation: Southeast

lb/hr Steam: 159,350

lb/hr Coal: 16,570

lb/hr Feedwater:

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 32

Date: 3/21/78

Page: 1 of 4

TIME OF READING	12:11	13:14	14:11	15:13	16:12
COAL SCALE A COUNTER x 200 lbs	465136	465178	465213	465257	465291
COAL SCALE B COUNTER x 200 lbs	486034	486083	486125	486170	486212
FW FLOW INTEGRATOR x 1000 lbs	818478	818645	818790	818938	819119
STM FLOW INTEGRATOR x 1000 lbs	701053	701219	701363	701524	701683
OVERFIRE AIR PRESS, "H_2O	25	25	22	25	25
FD FAN DISCHARGE PRESS, "H_2O	1.4	1.5	2.0	1.8	1.6
FURNACE PRESSURE, "H_2O	-.1	-.1	0	-.1	0
GRATE DRAFT, "H_2O	0	+.1	+.1	+.1	+.1
BOILER OUTLET PRESS, "H_2O	-1.1	-1.1	-1.4	-1.3	-1.2
ECONOMIZER INLET PRESS, "H_2O	-3.8	-3.8	-4.5	-4.0	-4.0
FD FAN AMPS	70	71	74	71	71
OFA FAN AMPS	106	106	111	106	106
DRUM PRESSURE, psig	190	190	190	190	190
FW PRESSURE, psig	295	295	290	295	295
STEAM HEADER PRESSURE, psig	190	190	187	189	
FW FLOW x 1000 lb/hr	160	160	155	160	170
STEAM FLOW x 1000 lb/hr	160	160	160	160	160
AIR FLOW, %	67	64	72	70	68
FD FAN IN TEMP, °F	62	63	62	63	62
ECON OUT GAS TEMP, °F	390	395	400	395	394
STEAM TEMP, °F	560	557	557	557	560
ECON IN WATER TEMP, °F	250	249	250	248	245
ECON OUT WATER TEMP, °F	325	325	325	325	325

Coal Designation:

lb/hr Steam:

lb/hr Coal:

lb/hr Feedwater:

PANEL BOARD DATA
ABMA TEST SITE B

Test No. 37

Date:

Page: ~~1 of 1~~ 2 of 4

TIME OF READING	17:13				
COAL SCALE A COUNTER x 200 lbs	465221				
COAL SCALE B COUNTER x 200 lbs	486212				
FW FLOW INTEGRATOR x 1000 lbs	819281				
STM FLOW INTEGRATOR x 1000 lbs	701846				
OVERFIRE AIR PRESS, "H_2O	.5				
FD FAN DISCHARGE PRESS, "H_2O	1.7				
FURNACE PRESSURE, "H_2O	-.1				
GRATE DRAFT, "H_2O	+.1				
BOILER OUTLET PRESS, "H_2O	-1.1				
ECONOMIZER INLET PRESS, "H_2O	-4.0				
FD FAN AMPS	71				
OFA FAN AMPS	106				
DRUM PRESSURE, psig	190				
FW PRESSURE, psig	295				
STEAM HEADER PRESSURE, psig	185				
FW FLOW x 1000 lb/hr	160				
STEAM FLOW x 1000 lb/hr	160				
AIR FLOW, %	71				
FD FAN IN TEMP, °F	—				
ECON OUT GAS TEMP, °F	395				
STEAM TEMP, °F	565				
ECON IN WATER TEMP, °F	245				
ECON OUT WATER TEMP, °F	325				

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 33

Page ~~2 of 2~~
3 of 4

OXYGEN, %	8.5	8.0	8.0	7.5	6.5
OPACITY, %	7	6	6-7	5-6	5
SO_2, PPM	290	230	230	225	220
DRUM LEVEL CONTROL	7.5	.5	-1.0	+1.5	1.0
FEEDWATER CONTROL	49	63	72	60	68
FURNACE PRESSURE CONTROL	-.3	-.3	-.35	-.3	-.3
FD FAN DAMPER CONTROL	63	60	72	74	74
AIR FLOW CONTROL	67	67	79	76	77
STEAM/AIR RATIO CONTROL	63	62	68	69	67
OVERFIRE AIR VANCE CONTROL	88	82	100+	70	74
BOILER SUBMASTER	90	87	97	93	95
PLANT MASTER	195	180	179	176	178
FRONT UPPER OFA PRESS, "H_2O	6.4	6.4	6.4	6.5	6.5
FRONT LOWER OFA PRESS, "H_2O	4.6/3.7	4.6/3.7	4.6/3.7	4.6/3.7	4.6/3.7
REAR UPPER OFA PRESS, "H_2O	21.2	21.3	26.8	21.2	21.0
REAR LOWER OFA PRESS, "H_2O	24.1	24.2	—	24.0	24.2
BLR HPR REINJECTION PRESS, "H_2O	5.0	4.5	4.5	4.7	4.7
MECH HPR REINJECTION PRESS, "H_2O	7.3	6.6	6.6	6.6	6.5
GRATE SPEED SETTING (left/right)	6/6	6.0/6.0	4.5/5.5	4.5/5.5	4.5/5.5

REMARKS:

PANEL BOARD DATA
ABMA TEST SITE B

Test No: 33

Page ~~2 of 2~~ 4 of 4

OXYGEN, %	7.0				
OPACITY, %	7.8				
SO_2, PPM	200				
DRUM LEVEL CONTROL	1.0				
FEEDWATER CONTROL	64				
FURNACE PRESSURE CONTROL	-3				
FD FAN DAMPER CONTROL	69				
AIR FLOW CONTROL	78				
STEAM/AIR RATIO CONTROL	67				
OVERFIRE AIR VANCE CONTROL	45				
BOILER SUBMASTER	91				
PLANT MASTER	189				
FRONT UPPER OFA PRESS, "H_2O	65				
FRONT LOWER OFA PRESS, "H_2O	41.2/38				
REAR UPPER OFA PRESS, "H_2O	21.1				
REAR LOWER OFA PRESS, "H_2O	24.1				
BLR HPR REINJECTION PRESS, "H_2O	4.5				
MECH HPR REINJECTION PRESS, "H_2O	6.5				
GRATE SPEED SETTING (left/right)	4.5/5.5				

REMARKS:

KVB

NOTES

TEST NO: 33 - vacuum gage was dropped yesterday, and now reads differently from before in the higher range (15-30 inches H_2O) so a U tube manometer was used to measure the O.F.A pressures.

TEST NO: 33. The O.F.A was changed to 32 in H_2O just before shift change at 2:10 p.m. The operator is now gone and no one knows why. At 2:30 I had the new operator bring the O.F.A. back to 25 in H_2O

TEST NO:

TEST NO:

TEST NO:

SECTION 2.0

PARTICULATE DATA

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PARTICULATE DATA SUMMARY
PART I

LOCATION: AGMA Site B

a = Std. orf
b = Mech. orf c = Std. orf

TEST NO.	Total Mass mgm.	Dry Gas Volume ft^3	Liquid Coll. ml.	Baro. Press. "Hg	Static Press. "H_2O	Pitot ΔP "H_2O	Orifice ΔH "H_2O	Stack Gas Temp. °R	Excess O_2 %	Sampling Time min.	Nozzle Dia. in.	Pitot Factor n.d.	Fuel Factor SCF/10^6BTU	Flue Gas MW g/g mole
2	4082.8	24.857	27	29.22	-0.70	0052	.69	863	11.3	38	.439	.837	9225	29.40
3a	4311.1	24.079	23	29.20	-0.70	0.054	0.60	862	10.9	40	.439	.837		29.26
3b	5410.3	24.86 24.34	40	29.70	-1.7	0.056 0.048	0.52 0.41	865 863	10.5	30 30	.376	.837 .666		29.20
4a	8018.3	29.62	43.5	29.60	-.70	0.074	0.86	895	8.0	42	.439	.837		29.64
4b	4291.1	31.750 31.775	41.5	29.60	-1.35	0.119 0.149	0.71 0.61	900 900	7.8	30 18	.376	.837 .866		29.64
6a	11,[illegible]	25.153	37.2	30.24	-1.31	0.137	0.711	996	5.2	40	.352	0.837		29.68
6b	6278	24.879 24.340	55	30.24	-2.90	0.203 0.242	1.164 1.004	951 949	4.3	30 18	0.376	0.837 .666		29.68
7a	15,847.5	23.860	45	29.87	-1.20	0.124	0.690	936	4.4	44	.352	.837		29.58
7b	8537.9	19.810 11.10	57.9	29.87	-2.86	.157 .244	1.065 1.008	950	4.5	30 18	0.376	.837 .666		29.55
8a	[illegible]	20.384	81.3	29.05	-4.35	0.173	.985	965	10.2	40	0.331	.837		29.17
8b	8059.4	21.355 12.422	59.5	29.06	-4.5	0.245 0.303	1.58 1.45	970 970	9.4	30 18	0.376	.837 .666		29.23
9a	6321.1	25.599	46.3	28.20	-1.5	0.114	0.649	950	6.9	40	0.382	0.837		29.23
9b	6155.9	24.043 12.362	37.5	28.80	-3.7	.192 .221	1.14 .91	955	6.0	30 18	0.376	.837 .666		29.23
10a	8258.3	42.96	42.5	29.71	-0.54	.0938	0.534	905	8.8	80	0.380	.837		29.37
10b	3[illegible]	15.82 11.34	36.7	29.71	-2.50	.119 .163	0.697 0.653	905	9.9	30 18	0.376	.837 .666		29.47
12a	14444.7	23.367	34	29.77	-0.54	0.068	0.747	904	8.0	40	0.439	0.837		29.41
12b	4[illegible]0.0	19.340 10.382	44.5	29.77	-3.40	0.124 0.142	0.663 0.562	905	8.9	30 18	0.376	0.837 0.666		29.36
15a	33,264.4	50.23	81.3	30.08	-1.2	0.175	0.761	960	4.3	76	0.351	0.837		29.69
15b	615	51.80	115.4	30.08	-6.0	0.5221	0.7889	908	6.0	120	0.247	0.837		29.56
16a	3[illegible]	50.10	87.3	30.05	-1.7	0.2505	1.2175	970	7.0	80	0.381	0.837		29.54
16b	37.1	97.455	118	30.05	-6.0	0.9162	1.7264	830	8.2	120	0.247	0.837		29.54

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PARTICULATE DATA SUMMARY
PART I

LOCATION: Site B

TEST NO.	Total Mass mgm.	Dry Gas Volume ft^3	Liquid Coll. ml.	Baro. Press. "Hg	Static Press. "H_2O	Pitot ΔP "H_2O	Orifice ΔH "H_2O	Stack Gas Temp. °R	Excess O_2 %	Sampling Time min.	Nozzle Dia. in.	Pitot Factor n.d.	Fuel Factor SCF/10^6BTU	Flue Gas MW g/g mole
17a	15,521.3	45.89	62	29.94	-1.5	0.2125	1.148	977	6.6	60	0.381	0.837	9.820	29.58
17b	68.5	28.659 14.327	56	29.94	-6.2	0.321 0.37	0.931 0.616	978 973	5.6	40 24	0.313	0.837		29.64
18a	17,344.4	42.576	53	29.92	-1.2	0.141	0.806	964	6.5	61.5	0.381	0.837		29.64
18b	1,274.6	31.94 17.36	59.5	29.92	-4.0	0.191 0.23	1.145 0.915	950 940	6.5	40 24	0.377	0.837 0.666		29.66
19a	14,807.6	39.562	56.9	29.74	-0.71	0.123	0.70	956	4.7	60	0.381	0.837		29.70
19b	976.9	31.06 17.60	73.2	29.74	-3.2	.184 0.213	1.01 0.885	948 940	4.7	40 24	0.377	0.837 0.666		29.70
20a	16,917.2	41.484	49.8	29.72	-1.2	0.143	0.882	950	6.8	60	0.381	0.837		29.60
20b	908.5	34.260 17.750	80.3	29.72	-4.2	0.23 0.246	1.36 1.22	952 930	6.8	40 24	0.377	0.837 0.666		29.42
21a	12,009.9	41.92	50.7	29.66	-1.3	0.1575	0.872	958	6.8	57	0.387	0.837		29.59
21b	1,019.5	34.749 18.370	66	29.65	-3.8	0.233 0.251	1.355 1.01	957 952	6.8	40 24	0.377	0.837 0.666		29.58
22a	14,408.5	37.72	53.5	29.60	-1.36	0.127	0.739	960	6.3	57	0.387	0.837		29.53
22b	1,222.2	32.037 17.952	75	29.60	-1.9	0.1945 0.245	1.144 1.09	949 950	6.3	40 24	0.377	0.837 0.666		29.53
23a	16,924.5	51.743	72.9	29.86	-2.0	0.268	1.505	1016	5.5	54	0.381	0.837		29.62
23b	1,047.1	32.749 23.200	92.5	29.86	-4.5	0.373 0.425	2.00 1.66	1043 982	5.5	32 24	0.377	0.837 0.666		29.60
23b	↓	7.253	↓	↓	↓	0.312	1.50	1000	↓	8	0.312	0.837		↓
24a	15,524.1	32.26	43	29.65	-1.7	0.2015	0.5263	1003	5.1	57	0.316	0.837		29.69
24b	5524.9	29.981 15.001	66	29.65	-5.7	0.339 0.393	0.998 0.812	992 982	5.1	40 24	0.313	0.837 0.666		29.62
25a	18,429.0	34.415	59.25	29.45	-1.8	0.236	0.621	1014	5.3	60	0.316	0.837		29.62
25b	909.3	29.130 15.801	68.3	29.45	-5.7	0.344 0.431	0.855 0.707	993	5.3	40 24	0.313	0.837 0.666		29.57
26a	15,649.1	35.809	50.3	29.87	-1.65	0.225	0.591	1006	5.3	60	0.316	0.837		29.63
26b	944.8	29.100 19.022	59.9	29.87	-5.4	0.374 0.386	0.908 0.603	996 998	5.3	40 24	0.313	0.837 0.666		29.64

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PARTICULATE DATA SUMMARY
PART I

LOCATION: S.4. B

TEST NO.	Total Mass mgm.	Dry Gas Volume ft^3	Liquid Coll. ml.	Baro. Press. "Hg	Static Press. "H_2O	Pitot ΔP "H_2O	Orifice ΔH "H_2O	Stack Gas Temp. °R	Excess O_2 %	Sampling Time min.	Nozzle Dia. in.	Pitot Factor n.d.	Fuel Factor SCF/10^6BTU	Flue Gas MW g/g mole
236	15,713.0	41.617	55.2	29.92	-1.2	0.155	0.893	976	6.4	57	0.351	0.837	9820	29.55
236	706.2	24.21 12.48	57.0	↓	-4.0	0.236 0.295	0.697 0.46	959 953	6.4	40 24	0.313	0.837 0.666	↓	29.55
238	12,893.3	39.828	58.3		-1.4	0.17	0.987	971	6.5	57	0.381	0.837		29.59
238	407.3	24.910 18.235	42.1	↓	-4.0	0.238 0.265	0.705 0.40	966 958	6.5	40 24	0.313	0.837 0.666	↓	29.59

#15900 rev.

PARTICULATE DATA SUMMARY
PART II

Location Site B

a: Dic out b: Mech out c: ESP out

TEST NO.	LOAD %	O_2 %	CONDITIONS	EMISSIONS lb/10^6BTU	GR/SCF	LB/HR	Moisture %	Stack Gas Velocity Ft/sec	Stack Gas Flow SCF/sec	Isokin. %
2	27.2	11.3	baseline, kent. (underload)	6.571	2.157	826	4.20	16.37	745	130
3a	27.2	10.9	" " Hot Gold	6.843	2.022	1199	4.36	20.51	757	98
3b	"	10.3	" "	0.543	0.193	71	4.13	20.04	714	103
4a	47.3	8.0	baseline kent. (underload)	9.650	4.263	1921	6.56	19.21	876	103
4b	"	7.8	" " "	0.446	0.199	86	5.59	24.39	835	112
5a	35.5	5.2	Min. OFA. Southeast	11.653	6.245	2752	5.83	27.27	1168	103
5b	"	4.3	" "	0.469	0.265	145	6.67	32.11	1061	98
7a	25.8	4.4	Min OFA. "	10.224	5.788	3211	7.11	35.97	1112	98
7b	"	4.5	" "	0.755	0.423	225	8.06	31.70	1034	84
8a	24.5	10.2	high O_2 kent. (underload)	15.512	5.674	3737	5.61	31.95	1281	90
8b	"	9.4	" " "	0.520	0.326	204	6.31	39.23	1214	98
9a	72.5	6.9	7% O_2 " "	8.163	2.902	2098	8.08	25.71	1045	104
9b	"	6.0	" " "	0.578	0.263	136	7.02	32.11	1002	103
11a	47.6	8.5	Min OFA. Reload	7.214	2.482	1306	4.50	22.25	982	92
11b	"	9.4	" " "	0.481	0.189	83	5.57	25.11	856	98
12a	48.3	8.0	Min OFA. "	9.566	4.215	1820	6.35	18.96	840	105
12b	"	8.9	" " "	0.500	0.205	89	6.54	24.62	839	102
15a	87.4	4.3	4.3% O_2 "	12.528	7.048	4140	7.08	27.30	1148	100
15b	"	6.0	" " "	0.023	0.012	6	6.43	52.48	973	107
16a	88.7	7.0	7.0% O_2 "	14.627	6.943	3365	5.69	37.52	1558	98
16b	"	8.2	" " "	0.018	0.008	5	5.28	66.71	1203	103

#15900 Rev.

PARTICULATE DATA SUMMARY
PART II

Location SITE B

TEST NO.	LOAD %	O_2 %	CONDITIONS	EMISSIONS lb/10^6BTU	EMISSIONS GR/SCF	EMISSIONS LB/HR	Moisture %	Stack Gas Velocity Ft/sec	Stack Gas Flow SCF/sec	Isokin. %
17a	88.1	6.5	6.5% O_2 Reload	10.655	5.203	3815	6.00	34.72	1426	92
17b	"	5.6	" "	0.461	0.244	162	5.77	41.02	1295	102
18a	73.7	6.5	MAX OFA, Southeast	13.880	7.485	5241	5.99	34.35	1361	102
18b	"	"	" " "	3.534	1.906	1289	6.53	42.56	1315	105
19a	75.1	4.7	low OFA, Very O_2 Kent, Cumberland	10.524	5.822	3270	6.41	26.13	1092	102
19b	"	"	" " "	0.563	0.311	159	6.68	30.28	989	104
20a	72.8	6.8	middle OFA Very O_2 " "	10.806	5.202	3164	5.41	23.16	1182	99
20b	"	"	" " "	0.561	0.270	152	6.83	33.82	1092	101
21a	72.8	6.8	Max. OFA Hatfield	9.245	4.451	2772	5.46	29.14	1211	99
21b	"	"	" " "	0.619	0.298	168	5.54	34.06	1095	102
22a	71.8	6.3	Min O.F.A. "	12.265	6.114	3482	6.35	26.77	1107	98
22b	"	"	" " "	0.824	0.411	219	6.68	31.93	1036	102
23a	98.9	5.5	Wet flush conj, Kent. Cumb	9.587	5.040	4061	6.25	39.80	1567	105
23b	"	"	" " " " "	0.485	0.255	177	6.47	44.29	1346	104
24a	98.8	5.1	Southeast Coal	13.880	7.485	5241	5.99	34.35	1361	102
24b	"	"	" "	3.534	1.906	1289	6.53	42.56	1315	105
25a	100.2	5.3	Kentucky Cumberland Coal	15.754	8.389	6316	7.65	37.61	1464	97
25b	"	"	" " "	0.596	0.317	218	6.82	43.72	1335	102
26a	99.0	5.3	Hatfield Coal	12.671	6.747	5008	6.24	76.26	1443	102
26b	"	"	" "	0.635	0.338	209	6.17	38.60	12020	110

#15900 Rev.

PARTICULATE DATA SUMMARY
PART II

Location Site B

TEST NO.	LOAD %	O_2 %	CONDITIONS	EMISSIONS lb/10^6BTU	EMISSIONS GR/SCF	EMISSIONS LB/HR	Moisture %	Stack Gas Velocity Ft/sec	Stack Gas Flow SCF/sec	Isokin. %
27a	79.4	6.4	Max OFA, Reduc Comb.	11.746	5.816	3647	5.90	29.64	1220	102
27b	"	"	" " " "	0.541	0.293	177	6.76	36.12	1170	98
28a	80.9	6.5	Max OFA, " "	9.980	4.907	3229	6.47	30.95	1279	94
28b	"	"	" " " "	0.343	0.169	99	5.09	35.60	1144	99

#15900 Rev.

PARTICULATE

DATA

Leak Check Rate — ISOKINETICS = _____ %

	Vac in. Hg	ft³/min
Before		
After		

Sampling Time Per Point, Min
7.0

TEST NUMBER 2
DATE
OPERATOR
FUEL
SITE S.K.B
PROBE LOCATION

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
Port #1	15:51	.08	1.00	1268.26	430	340	295		70	75		7.0
2		.05	.64	1269.45	430	320	305		62	75		4.0
3		.025	.42	1270.50	395	320	320		62	78		2.6
4		.03	.38	1271.51	365	320	320		62	80		3.3
Port #2 1		.065	.84	1271.88	380	260	360		75	80		
2		.04	.52	1273.01	420	300	360		60	82		
3		.045	.68	1275.78	360	310	340		60	82		
4		.00										
Port #3 1		.06	.92	1277.25	400	250	290		62	85		
2		.04	.52	1278.68	420	270	290		66	85		
3		.05	.66	1280.15	425	350	290		62	85		
4		.00										
Port #4 1		.07	.93	1281.60	380	340	310		75	85		
2		.04	.53	1282.77	400	310	320		65	85		
3		.05	.66	1284.01	405	330	320		60	85		
4		.00										
Port #5 1		.065	.86	1286.08	405	290	320		70	85		
2		.055	.73	1288.02	430	310	325		68	90		
3		.055	.73	1289.91	410	310	330		65	90		
4		.00										
Port #6 1		.07	.93	1291.65	405	280	330		70	90		
2		.04	.53	1292.81	405	280	330		70	90		
3		.05	.66	1294.14	410	300	280		60	90		
4		0.00										
Average												

METER VOL. END / START 1260.78 ft³

T_{stack}	Stack Press. In Hg Gauge	Barometric Pressure

Percent O_2 =

Nomograph Setting

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔHg = Nomi(Meas)=
% H_2O = Nomi(Actual)=

Imp.	Vol. (End)	Vol. (Start)	Vol. (net)
#1	117	102	15
#2	105	100	5
#3	0	0	0
		Total	20
#4 Silica Gel	171	164	7
		Total Vol. H_2O	27 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
2

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 99.1

TEST NUMBER 3

DATE

OPERATOR JC + R.AP

FUEL

SITE S.H.B

PROBE LOCATION BLR-OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.06	.68	1296.08	400	260	320		70	90		—
2		.05	.56	1297.15	410	300	320		70	90		2
3		.05	.56	1298.25	400	330	330		70	90		2
4		.03	.34	1299.09	400	320	330		70	90		1
5		.07	.79	1300.37	400	270	330		80	90		4
6		.045	.50	1301.37	410	270	330		70	95		2
7		.04	.45	1302.35	400	300	340		70	100		2
8		0.00	—									
9		.065	.73	1303.53	400	280	340		80	95		3
10		.035	.39	1304.50	410	270	340		70	100		2
11		.05	.55	1305.56	400	300	340		70	98		2
12		0.00	—									
13		.072	.80	1306.83	400	270	340		75	100		5
14		.05	.56	1307.91	410	280	340		60	100		3.5
15		.04	.45	1308.8	400	300	310		60	100		2
16		0.00	—									
17		.06	.66	1310.01	400	280	330		70	100		4
18		.045	.50	1311.03	400	—	340		70	100		3
19		.05	.56	1312.11	400	300	340		60	100		3.5
20		0.00	—									
21		.10	1.1	1313.61	400	270	350		80	100		5
22		.065	.74	1314.85	400	280	340		70	100		4
23		.075	.85	1316.15	400	280	340		70	100		4.5
24		.02	.22	1317.03	400	290	340		70	110		1.0
Average		.0536	.589	—	402	—						

METER VOL. END 1317.03

START 1294.98

SAMPLE VOL. 24.07 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.7" H_2O	29.70

Percent O_2 =

METER CORR — 1.0886

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)= .439

▼ = .165

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	118	-	105	=	13
#2	105	-	100	=	5
#3	0	-	0	=	0
				Total	18
#4 Silica Gel	g(End) 163	-	g(Start) 158	=	Δgrams 5

Total Vol. H_2O 23 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
5

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 97% PRORATED

TEST NUMBER 3

DATE 1-5-78

OPERATOR J. R.

FUEL

SITE S. & B

PROBE LOCATION MECH OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1	11:25	.061	38	555.492	410	250	275		70	100		2
2		.12	.75	558.740	410	240	270		68	100		2
3		.12	.75	562.300	410	280	270		62	100		2
4		.10	.60	565.180	410	275	280		68	100		2
5		.11	.65	568.178	410	270	280		62	110		2
6		.055	.325	LEVACH 5[illegible] 570.620	405	210	245		70	110		2
7		.075	.45	573.178	405	220	280		68	110		2
8		.075	.45	575.655	405	265	285		62	110		2
9		.085	.50	578.320	405	290	290		62	115		2
10		.055	.325	580.500	405	285	310		68	115		2
11		.11	.46	582.960	405	290	260		78	115		1.8
12		.11	.46	585.450	405	270	285		70	115		1.9
13		.08	.34	587.695	405	310	310		68	115		1.8
14		.085	.36	590.065	405	290	310		68	115		1.9
15		.10	.42	592.492	405	270	310		68	115		2
16	13:57	.10	.42	594.890	405	330	310		70	115		2
Average		.085 / .0975	.518 / .41		407 / 405							

CP .837

CP .666

METER VOL. END

START

SAMPLE VOL. ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	-1.7" H_2O	29.70

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .376

= CP

6' probe - .666

11' probe - .837

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	125	-	100	=	25
#2	107	-	100	=	7
#3	0	-	0	=	0
				Total	32
#4 Silica Gel	g(End) 173	-	g(Start) 165	=	Δgrams 8
				Total Vol. H_2O	40 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
2.0

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 102.9

TEST NUMBER 4
DATE 1-6-78
OPERATOR
FUEL Kent Comb.
SITE B
PROBE LOCATION BLR-SUP

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2,%	Vac.
1		.11	1.2	1318.78	430	250	330		70	90		5
2		.07	.79	1320.05	440	270	340		60	90		4
3		.065	.73	1321.27	430	270	340		60	90		4
4		.01	.11	1321.81	400	300	340		65	90		<2
5		.10	1.1	1323.32	420	300	350		70	90		5
6		.075	.84	1324.65	440	290	350		60	90		4
7		.08	.90	1326.63	450	340	350		60	95		4.5
8		0.00	—	—	—	—	—					
9		.14	1.6	1327.84	440	290	350		65	100		7
10		.095	1.1	1329.37	460	300	360		60	100		5
11		.07	.79	1330.65	460	270	350		70	100		4
12		0.00	—	—	—	—	—					
13		.10	1.1	1332.14	430	260	350		60	100		5
14		.06	.68	1333.31	440	270	350		65	100		4
15		.07	.79	1334.58	410	300	350		60	100		4
16		.02	.22	1335.23	410	320	330		65	100		2
17		.11	1.20	1336.80	420	300	350		70	100		6
18		.07	.79	1337.90	440	300	340		70	100		4.5
19		.08	.90	1339.85	440	300	350		70	100		5
20		0.00	—	—	—	—	—					
21		.10	1.1	1340.73	440	300	350		80	100		6
22		.07	.79	1341.90	—	300	350		70	100		4.5
23		.065	.73	1343.16	—	250	350		70	100		4.5
24		.06	.65	1344.38	420	260	350		70	100		3.5
Average		.0743	.86	—	434.76	—	—	—	—	—	—	

METER VOL. END 1344.38
START 1317
SAMPLE VOL. 29.62 ft^3

METER CORR 1.0886

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.83" H_2O	26.60

Percent O_2 =

Nomograph Setup

θ_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Mwz(Ideal)=
% H_2O = Mwz(Actual)= .439
Y = .165

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	132	-	100	=	32
#2	105	-	100	=	5
#3	0	-	0	=	0
				Total	37

#4	g(End)		g(Start)		Δgrams
Silica Gel	153	-	146.5	=	6.5
				Total Vol. H_2O	43.5 ml

PARTICULATE

DATA

Sampling Time Per Point, Min

Leak Check Rate

	Vac in. Hg	ft³/min
Before		
After		

ISOKINETICS = 101.2% PRORATED

TEST NUMBER 4
DATE 1-6-76
OPERATOR
FUEL Resid. Comb.
SITE B
PROBE LOCATION MECH OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1	10:20	.16	.675	596.815	440	275	350		80	100		1.8
2		.165	.70	598.800	438	290	320		68	100		2
3		.165	.70	600.670	440	300	310		68	100		2.1
4		.13	.55	602.391	440	230	275		80	102		1.8
5		.135	.57	604.095	440	280	300		70	105		1.8
6		.14	.59	605.81	440	315	320		70	100		1.9
7		.12	.725	607.94	440	—	320		80	105		2.1
8		.125	.75	610.000	438	240	315		70	105		2.2
9		.13	.775	611.990	440	275	315		68	105		2.4
10		.15	.90	614.785	442	280	305		68	105		3.0
11		.16	.95	617.001	442	285	320		68	105		3.1
12		.07	.42	618.658	438	—	270		68	110		2.0
13		.105	.625	620.395	440	230	280		68	115		2.4
14		.09	.54	622.050	440	270	290		68	115		2.4
15		.11	.66	623.820	440	275	300		68	115		2.4
16	1225	.135	.80	625.790	440	250	250		68	115		2.6
Average		.149 / .114	.63 / .71	10.820 / 19.980	440 / 440							

CP .666

CP .827

METER VOL. END 625.79
START 594.99
SAMPLE VOL. 30.80 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	-1.85" H_2O	29.60

Percent O_2 =

Nomograph Setup

P_{meter} =	C =		
P_{stack} =	T_{stack} =		
T_{meter} =	ΔP =		
ΔH_g =	Nox(Ideal)=		
% H_2O =	Nox(Actual)= .376		

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	132	100	32
#2	103	100	3
#3	0	0	0
		Total	35

#4 Silica	g(End)	g(Start)	Δgrams
	145	138.5	6.5
		Total Vol. H_2O	41.5 ml

6' probe — .666
11' probe — .837

PARTICULATE

DATA

Sampling Time Per Point, Min
2

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 102.5

TEST NUMBER 6
DATE 1-11-78
OPERATOR RAP
FUEL
SITE B
PROBE LOCATION BLR-OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2,%	Vac.
Port #1 1	10:48	.15	.90	1355.10	460	310	270		60	62		4.2
2		.11	.66	1356.32	490	320	285		55	62		3.5
3		.10	.59	1357.50	470	320	305		55	62		3.2
4		.07	.42	1358.48	465	320	320		60	65		2.8
Port #2 1		.22	1.50	1360.28	480	260	300		68	—		—
2		.14	.78	1361.59	490	250	290		62	70		3.8
3		.14	.76	1362.89	490	270	290		60	71		3.8
4		—	—	NEGATIVE	—	—	—		—	—		—
Port #3 1		.165	.85	1364.27	490	255	295		62	72		4.2
2		.11	.60	1365.42	500	260	300		55	72		3.5
3		.135	.74	1366.71	490	280	300		53	75		3.5
4		0.00	—	—	—	—	—		—	—		—
Port #4 1		.185	1.0	1368.18	480	260	305		58	75		4.7
2		.145	.80	1369.48	495	265	305		53	80		4.2
3		.17	.93	1370.91	500	290	305		52	80		4.5
4		0.00	—	—	—	—	—		—	—		—
Port #5 1		.17	.93	1372.37	485	250	305		68	80		4.5
2		.13	.72	1373.63	495	260	300		68	80		4.0
3		.125	.68	1374.83	485	285	305		63	82		3.8
4		0.00	—	—	—	—	—		—	—		—
Port #6 1		.15	.82	1376.13	485	265	310		68	82		4.2
2		.105	.58	1377.25	490	270	305		68	85		3.5
3		.13	.72	1378.49	510	280	310		75	83		3.8
4		.08	.44	1379.514	460	280	310		75	85		3.2
Average		.136	.771	—	485.5	—	—	—	—	—	—	—

METER VOL. END 1379.514
START 1353.652
SAMPLE VOL. 26.153 ft^3

METER CORR (1.0886)

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.3 "H_2O	30.24

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Nos(Ideal)=
% H_2O = Nos(Actual)= .382
T = .31

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	125	100	25
#2	105	100	5
#3	0	0	—
		Total	30

#4	g(End)	g(Start)	Δgrams
Silica Gel	—	—	7.2

Total Vol. H_2O 37.2 ml

PARTICULATE

DATA

PROGRAMED

Leak Check Rate

Vac in. Hg ft³/min

ISOKINETICS = 103%

TEST NUMBER 6

DATE 1-11-78

OPERATOR J.R.

FUEL

SITE B

PROBE LOCATION MECH OUT

Sampling Time Per Point, Min
3

Before

After

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.26	1.5	628.819	495	240	270		68	85		5
2		.205	1.2	631.350	490	240	275		62	85		4.2
3		.205	1.2	633.870	490	265	275		62	88		4.2
4		.26	1.5	636.738	490	265	285		62	88		5.5
5		.295	1.7	639.875	485	260	285		58	90		6.5
6		.09	.51	641.579	485	230	265		58	92		3.5
7		.16	.91	643.780	490	240	270		62	95		4
8		.16	.91	646.010	495	280	280		58	95		4.2
9		.18	1.01	648.341	495	280	295		59	98		4.5
10		.21	1.20	650.809	490	275	295		59	98		4.9
11		.26	1.05	653.110	485	240	250		68	98		4.2
12		.31	1.28	655.640	490	270	275		64	98		5.1
13		.27	1.1	657.980	490	320	300		58	100		5.2
14		.23	.925	660.128	490	230	—		75	100		4.1
15		.21	.85	662.192	490	260	230		70	100		4.0
16		.20	.82	664.250	490	260	260		70	100		4.0
Average		.208 / .246	1.10	24.379 / 13.441	490.5 / 490							

Cp .837

Cp .666

METER VOL. END 664.250

START 625.93

SAMPLE VOL. ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	-2.9" H_2O	30.24

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)= .376

▼ = .45 - 6' .32 - 10'

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	138	-	100	=	38
#2	108	-	100	=	8
#3	0	-	0	=	0
				Total	46

#4 Silica Gel	g(End)		g(Start)		Δgrams
	160	-	151	=	9

Total Vol. H_2O 55 ml

6' — Cp .666

11' — .837

PARTICULATE

DATA

Sampling Time Per Point, Min

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 96.5

TEST NUMBER 7
DATE 1-12-78
OPERATOR
FUEL
SITE B
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.16	.89	1380.96	480	260	330		80	70		—
2		.11	.61	1382.11	480	270	340		70	75		—
3		.12	.66	1383.29	480	310	340		60	70		—
4		.02	.11	1383.83	420	310	340		60	70		—
5		.19	1.15	1385.31	490	270	350		70	80		6
6		.12	.66	1386.49	480	270	350		60	80		4.5
7		.13	.71	1387.71	480	300	350		55	80		5
8		.00	—									
9		.19	1.05	1389.12	480	260	350		60	80		6.0
10		.13	.71	1390.34	490	270	360		60	80		5
11		.14	.79	1391.59	470	300	360		55	80		5
12		.02	.11	1392.12	430	320	350		55	80		1
13		.21	1.15	1393.63	510	250	325		65	85		[illegible]
14		.13	.71	1394.84	510	280	325		60	85		5
15		.15	.83	1396.14	500	280	310		70	85		6
16		.025	.14	1396.69	410	290	310		60	85		1
17		.14	.78	1397.93	480	270	310		70	90		6
18		.12	.66	1399.07	490	290	320		65	90		5
19		.14	.78	1400.41	480	300	320		70	70		6
20		.00	—									
21		.17	.94	1401.93	500	270	330		70	90		7
22		.13	.73	1403.16	510	290	330		70	90		6
23		.11	.61	1404.25	490	310	330		75	90		5
24		.08	.45	1405.19	420	320	340		70	90		4.5
Average		.124	.69	—	476	—						

METER VOL. END 1405.19
START 1379.60
SAMPLE VOL. ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.3" H_2O	29.87

Percent O_2 =

Homograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Bwo(Ideal)=
% H_2O = Bwo(Actual)= .382
Y = .34
% =

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	130	-	100	=	30
#2	107	-	100	=	7
#3	0	-	0	=	0
				Total	37

#4 Silica Gel	g(End)		g(Start)		Δgrams
	173.6	-	165.6	=	8
				Total Vol. H_2O	45 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min

Before

After

ISOKINETICS = 100.6

TEST NUMBER 7

DATE 1-12-78

OPERATOR JR

FUEL

SITE B

PROBE LOCATION MECH ON

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.205	1.2	666.828	480	250	300		75	90		5
2		.20	1.15	668.470	480	260	260		60	90		5
3		.20	1.15	670.862	485	270	300		60	90		5
4		.22	1.2	673.389	485	270	300		60	92		6
5		.23	1.3	675.964	485	270	300		60	95		6.5
6		.15	.85	678.059	490	270	300		60	95		5.5
7		.14	.79	680.042	490	250	260		68	95		5.5
8		.13	.68	681.888	490	270	280		68	100		5
9		.185	1.05	684.226	490	285	300		64	100		7.5
10		.205	1.20	686.668	490	300	330		64	102		9.0
11		.33	1.35	689.245	490	245	240		70	102		10.0
12		.27	1.12	691.679	490	285	300		68	102		9.0
13		.28	1.15	694.108	495	305	305		68	102		9.5
14		.17	.70	696.070	495	225	220		68	105		7.0
15		.205	.85	698.168	495	295	270		72	100		8.0
16		.21	.875	700.360	490	295	305		72	100		8.2
Average		.186 / .244	1.03	22.343 / 13.692	486 / 492							

CP .837

CP .666

METER VOL. END 700.360

START 664.325

SAMPLE VOL. ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	-2.85	29.87

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Nox(Ideal)=

% H_2O = Nox(Actual)= .376

T = .45-6 .32-11

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	143	100	43
#2	107	100	7
#3	0	0	0
		Total	50

#4 Silica	g(End)	g(Start)	Δgrams
	163.7	155.8	7.9

Total Vol. H_2O 57.9 ml

6' PROBE — CP .666

11' PROBE — .837

PARTICULATE

DATA

Sampling Time Per Point, Min
2

Leak Check Rate — Vac in. Hg — ft³/min
Before
After

ISOKINETICS = 98.1%

TEST NUMBER 8
DATE 1-25-78
OPERATOR JR + JC
FUEL
SITE B
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.19	1.6	406.84	510	290	310		75	80		5
2		.14	.79	408.099	510	310	310		68	80		4.5
3		.14	.79	409.395	510	340	320		68	80		4.5
4		.12	.675	410.600	500	330	330		68	85		4.0
5		.235	1.3	412.234	495	280	315		68	85		5.5
6		.15	.84	413.575	510	280	315		68	85		5.5
7		.175	.95	414.961	512	290	315		68	85		5.5
8		.00	—	—	—	—	—	—	—	—		—
9		.21	1.19	416.54	500	270	305		68	85		5
10		.145	.80	417.835	515	280	305		68	85		5
11		.15	.84	419.185	502	280	305		68	85		—
12		.00	—	—	—	—	—	—	—	—		
13		.25	1.7	420.892	500	240	290		80	95		7.5
14		.19	1.075	422.385	512	270	290		68	95		7
15		.17	.95	423.770	502	280	300		68	95		6
16		.00	—	—	—	—	—	—	—	—		—
17		.26	1.45	425.510	495	270	285		65	98		8
18		.16	.90	426.918	508	295	300		65	98		6.0
19		.175	.98	428.322	515	295	300		68	98		6.0
20		0.00	—	—	—	—	—	—	—	—		
21		.20	1.125	430.840	495	280	280		85	100		7.0
22		.16	.90	431.190	505	290	290		70	100		7.0
23		.19	1.075	432.700	508	300	295		70	100		7.0
24		.05	.28	433.410	502	300	295		75	102		—
Average		.173	.985	30.569	505	—	—	—	—	—	—	—

METER VOL. END 433.410 START 405.310
SAMPLE VOL. 30.569 ft³

METER CORR 1.0984

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.7" H_2O	29.06

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Nor(Ideal) =
% H_2O = Nor(Actual) = .381
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	125	100	25
#2	105	100	5
#3	0	0	0
		Total	30

#4 Silica Gel	g(End)	g(Start)	Grams
	159.8	152.5	7.3
		Total Vol. H_2O	37.3 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 96.2 % PRORATED

Sampling Time Per Point, Min
3

TEST NUMBER 8

DATE 1-25-78

OPERATOR RAP

FUEL

SITE B

PROBE LOCATION MECH OUT

	Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Out	Meter	O_2, %	Vac.
Cp .837	1	10:40	.27	1.55	703.53	—	250	300		70	95		9.0
	2		.25	1.45	706.30	510	265	300		70	96		8.8
	3		.28	1.60	709.18	510	290	310		70	98		10.5
	4		.43	1.8 max	712.2	510	290	310		65	100		12.0
	5		.36	2.0	715.5	510	310	320		62	100		12.2
	6	11:13	.23	1.30	717.76	510	—	260		72	100		10.0
	7		.24	1.38	720.43	510	230	270		65	105		10.3
	8		.20	1.15	722.89	510	270	285		62	105		9.8
	9		.31	1.55	725.66	510	280	280		65	105		12.5
	10		.28	1.60	728.37	510	290	290		62	105		12.8
Cp .666	11	11:53	.38	1.58	731.15	510	275	275		68	110		13.0
	12		.40	1.65	733.88	510	310	300		65	110		13.0
	13		.36	1.50	736.55	510	310	300		68	110		13.2
	14	12:12	.23	.95	738.82	510	250	300		68	110		10.0
	15		.29	1.20	741.29	510	290	315		68	115		12.0
	16		.28	1.17	743.795	510	320	320		70	115		12.5
	Average		.285 .323	1.45	27.758 15.425	510 510							

METER VOL. END 743.795

START 700.612

SAMPLE VOL. 43.183 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	-4.5" H_2O	29.06

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .376

6 PROBE — .666 =

4 PROBE — .837

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	132	-	100	=	32
#2	115	-	100	=	15
#3	.5	-	0	=	.5
				Total	47.5

#4	g(End)		g(Start)		Δgrams
Silica Gel	164.8	-	152.5	=	12.3

Total Vol. H_2O 59.8 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 106.7%

TEST NUMBER 9

DATE 1-25-78

OPERATOR JC + JK

FUEL

SITE B

PROBE LOCATION BLR OUT

Sampling Time Per Point, Min
2

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.20	1.15	435.130	495	295	340		68	90		—
2		.13	.74	436.392	500	300	350		68	90		4
3		.135	.745	437.712	501	320	340		62	92		4
4		.04	.23	438.455	450	340	340		68	92		—
5		.14	.79	439.76	450	275	340		68	92		—
6		.10	.56	440.940	495	280	340		68	92		4
7		.095	.54	441.440	490	300	340		68	96		—
8		.00										
9		.15	.85	443.295	485	270	305		72	100		—
10		.09	.52	444.400	490	280	300		68	100		3.5
11		.11	.625	445.592	495	300	310		68	100		4.5
12		.00										
13		.14	.79	447.100	490	290	310		65	100		—
14		.08	.45	448.085	498	320	310		65	100		—
15		.11	.625	449.240	498	320	310		68	102		5
16		0.00										
17		.14	.79	450.555	480	310	310		68	105		
18		.09	.52	451.615	490	310	320		68	105		
19		.10	.56	452.709	495	310	310		68	105		
20		.00										
21		.125	.71	453.923	490	320	320		68	108		5.5
22		.09	.52	454.990	500	310	300		68	108		
23		.08	.46	455.961	505	300	300		68	108		
24		.14	.80	457.255	500	300	290		68	110		6.5
Average		.114	.64	—	489	—						

METER VOL. END 457.255

START 433.51

SAMPLE VOL. 25.84 ft³

METER CORR. 1.0886

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.5" H_2O	28.80

Percent O_2 =

Homograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = 7.7108×10^{-4} ft²

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	133	-	100	=	33
#2	106	-	100	=	6
#3	0	-	0	=	0
				Total	39

#4	g(End)		g(Start)		Δgrams
Silica Gel	163.75	-	156.5	=	7.25

Total Vol. H_2O 46.26 ml

PARTICULATE

DATA

PROPOSED

Leak Check Rate

Vac in. Hg ft³/min

ISOKINETICS = 104.5

Sampling Time Per Point, Min
3

Before

After

TEST NUMBER 9

DATE 1-25-78

OPERATOR R.AP

FUEL

SITE B

PROBE LOCATION MECH

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.15	.62	745.92	495	260	310		70	105		—
2		.24	.98	748.24	495	260	315		70	105		5.0
3		.24	.98	750.55	495	290	315		65	105		5.2
4	16:37	.20	.83	752.68	495	255	295		70	105		4.8
5		.26	1.08	755.06	495	280	300		65	105		7.2
6		.24	.98	757.35	495	295	300		68	110		6.2
7	17:07	.17	1.0	759.69	495	250	270		68	112		7.0
8		.19	1.15	762.11	495	250	280		60	112		7.8
9		.20	1.18	764.56	495	270	270		58	113		8.0
10		.22	1.30	767.11	495	280	280		58	113		9.3
11		.24	1.40	769.77	495	290	290		60	114		10.5
12		.13	.77	771.80	495	240	300		68	115		6.8
13		.19	1.15	774.20	495	250	300		62	115		10.0
14		.16	.94	776.39	495	280	285		62	118		8.5
15		.21	1.25	778.9	495	290	315		65	120		11.0
16		.21	1.25	781.397	495	300	310		64	120		11.2
Average		.221 / .192	1.053	13.362 / 24.047	495							

METER VOL. END 781.397

START 743.948

SAMPLE VOL. 37.409 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	-3.7" H_2O	28.80

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)= .376

C_p

PROBE - 6 - .666

- 11' - .837

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	140	-	100	=	40
#2	107	-	100	=	7
#3	0	-	0	=	0
				Total	47

#4	g(End)		g(Start)		Δgrams
Silica	1670	-	156.5	=	10.5

Total Vol. H_2O 57.5 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 99.0 %

Sampling Time Per Point, Min
2

TEST NUMBER 11

DATE 1-28-78

OPERATOR RAP-JC

FUEL BLEND

SITE B

PROBE LOCATION BLR OMT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.11	.64	1459.95	440	280	300		60	65		2.5
2		.09	.51	1462.16	460	330	310		50	70		2.0
3		.09	.51	1464.39	460	330	290		55	70		2.0
4		.04	.22	1465.97	400	340	300		55	75		1
5		.12	.68	1468.45	440	330	300		65	75		
6		.08	.45	1470.41	450	300	330		60	75		
7		.10	.55	1472.63	440	330	300		60	80		2.5
8		00.0										
9		.12	.68	1475.09	440	300	320		65	85		3
10		.07	.40	1477.08	460	300	330		50	85		2
11		.08	.46	1479.20	450	330	340		55	85		2
12		0.00										
13		.15	.85	1481.89	440	280	330		60	90		4
14		.07	.40	1483.76	450	300	340		50	90		2
15		.10	.58	1485.95	440	330	340		55	90		2.5
16		.00										
17		.15	.85	1488.58	460	290	340		55	90		4
18		.075	.43	1490.50	450	300	340		55	95		2
19		.10	.58	1492.69	450	240	340		55	95		3
20		.00										
21		.11	.62	1495.00	440	300	340		60	100		3
22		.08	.48	1496.98	450	290	340		60	100		2
23		.12	.69	1499.39	460	330	340		60	100		4
24		.02	.11	1500.45	420	340	340		60	100		1
Average		.0937	.534	—	445							

METER CORR 1.0886

METER VOL. END 1522.45

START 1457.49

SAMPLE VOL. 42.96 ft³ — CORR 46.766

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.50 H_2O	29.71

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)= .381

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	125	-	100	=	25
#2	107	-	100	=	7
#3	0	-	0	=	0
				Total	32

#4	g(End)		g(Start)		Δgrams
Silica Gel	159	-	148.5	=	10.5

Total Vol. H_2O 42.5 ml

PARTICULATE

DATA

PR-CATED

Leak Check Rate

Vac in. Hg ft³/min

ISOKINETICS = 101.7%

TEST NUMBER 11

DATE 1-24-78

OPERATOR

FUEL

SITE

PROBE LOCATION Mech Out

Sampling Time Per Point, Min

Before

After

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Out	Meter	O_2, %	Vac.
1		.13	.76	783.721	445	250	280		55	78		4.5
2		.16	.94	786.000		270	290		58	78		5
3		.15	.88	788.170		270	300		58	78		4.8
4		.17	.99	790.528		270	300		58	78		5.1
5												
6		.09	.525	792.240		220	250		60	82		2.8
7		.10	.58	794.000		220	270		60	82		3.8
8		.11	.64	795.921		250	280		55	82		4
9		.14	.825	798.070		260	280		58	88		5
10		.14	.825	800.188		260	280		55	88		5
11		.19	.76	802.220		270	250		60	88		4.5
12		.19	.76	804.300		300	270		60	89		4.5
13		.17	.68	806.158		300	280		60	90		4
14		.14	.56	807.900		260	250		62	92		3.8
15		.13	.52	809.680		260	260		58	92		3.8
16		.16	.64	811.575		300	260		60	92		—
Average		.132 / .163	.725	18.615 / 11.387	445							

Cp .837

Cp .666

METER VOL. END 811.575

START 781.573

SAMPLE VOL. ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	-25" H_2O	29.71

Percent O_2 =

Cp - 6' Probe - .666

Cp - 11' PROBE - .837

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .376

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	119	-	100	=	19
#2	110	-	100	=	10
#3	0	-	0	=	0
				Total	29

#4	g(End)		g(Start)		Δgrams
Silica Gel	163	-	155.3	=	7.7

Total Vol. H_2O 36.7 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
2

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 104.4

TEST NUMBER 12

DATE 1-28-78

OPERATOR JR

FUEL BLEND

SITE B

PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.10	1.15	1502.22	420	250	300		70	75		7
2		.07	.80	1503.58	440	270	300		60	75		5
3		.06	.70	1504.85	440	300	300		50	70		4
4		.02	.23	1505.55	420	300	310		50	70		1
5		.08	.85	1506.92	440	250	320		50	70		6
6		.035	.36	1507.81	460	280	330		55	75		2
7		.07	.75	1509.08	440	320	330		50	80		—
8		.00	—	—	—	—	—	—	—	—		—
9		.10	1.1	1510.63	440	280	340		50	80		6
10		.07	.76	1511.92	460	280	340		50	80		4.5
11		.09	.86	1513.27	450	310	340		55	85		5
12		.00	—	—	—	—	—	—	—	—		—
13		.09	.99	1514.71	450	280	340		60	85		6
14		.055	.60	1515.84	460	300	330		55	85		4
15		.08	.87	1517.20	450	320	325		50	85		5
16		.00	—	—	—	—	—	—	—	—		—
17		.08	.88	1518.58	440	300	340		60	85		—
18		.06	.65	1519.76	440	290	330		55	90		—
19		.055	.60	1520.90	440	310	330		60	85		4
20		.00	—	—	—	—	—	—	—	—		—
21		.09	.99	1522.31	440	300	340		60	85		5.5
22		.06	.65	1523.51	450	320	340		60	90		4
23		.065	.71	1524.71	450	340	320		60	90		5
24		.04	.44	1525.67	450	340	340		65	90		2.5
Average		.068	.747	—	444	—	—	—	—	—	—	

CORR FACTOR 1.0886

METER VOL. END 1525.67

START 1500.53

SAMPLE VOL. 27.367 ft³ - CORR

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.5" H_2O	29.77

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Nox(Ideal) =

% H_2O = Nox(Actual) = .439

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	126	-	100	=	26
#2	103	-	100	=	3
#3	3	-	3	=	3
				Total	32

#4 Silica Gel	g(End)		g(Start)		Δgrams
	159	-	152	=	7

Total Vol. H_2O 39 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft³/min
Before
After

ISOKINETICS = 102.7

TEST NUMBER 12
DATE 1-28-78
OPERATOR JR
FUEL —
SITE B
PROBE LOCATION [redacted] MFCH OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.14	.56	813.440	445	300	270		55	85		—
2		.18	.72	815.431		260	240		52	85		—
3		.17	.68	817.412		265	250		52	85		3.5
4		.10	.40	818.940		250	300		52	85		—
5		.13	.51	820.615		270	280		52	85		3.5
6		.13	.51	822.270		290	290		52	85		—
7		.095	.50	823.900		250	260		58	90		
8		.10	.54	825.656		270	270		58	90		
9		.095	.50	827.272		250	270		58	92		
10		.10	.54	829.030		270	270		—	92		
11		.105	.575	830.761		270	270		—	92		
12		.135	.725	833.190		240	230		58	92		
13		.155	.825	835.360		270	260		58	92		4
14		.14	.75	837.490		270	260		58	92		4
15		.14	.75	839.431		270	280		58	92		4
16		.17	.92	841.629		260	285		58	95		4.5
Average		.14 / .125	.56 / .66	10.505 / 19.359	445	—						

Cp .666 (1–6)
Cp .837 (7–16)

METER VOL. END 841.629
START 811.685
SAMPLE VOL. 29.924 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
X	-3.4 "H_2O	29.77

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔT =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .376

Cp =

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	128	100	28
#2	105	100	5
#3	4	0	4
		Total	37
#4 Silica	g(End) 160.2	g(Start) 152.7	Δgrams 7.5
		Total Vol. H_2O	44.5 ml

1 6'. PROBE — .666
11 - PROBE - .837

PARTICULATE

DATA

Sampling Time Per Point, Min
4

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 97.9%

TEST NUMBER 15
DATE
OPERATOR
FUEL Reload
SITE B
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2,%	Vac.
1		.14	.79	1528.68	520	270	330		75	85		5
2		.11	.62	1531.01	500	320	330		70	80		4
3		.13	.72	1533.50	500	320	340		70	80		5
4		.02	.11	1534.59	440	320	340		75	85		1.5
5		.16	.90	1537.38		290	340		65	85		6.5
6		.10	.55	1539.53		290	340		70	90		5.0
7		.12	.68	1541.90		330	350		70	90		6.0
8		00	—	1542.97								
9		.15	.85	1546.00		260	350		80	90		—
10		.10	.56	1548.18		280	350		70	90		6
11		.15	.85	1550.84		320	350		65	90		7
12		00	—									
13		.20	1.1	1553.85		300	350		70	100		9
14		.14	.79	1556.41		300	350		65	95		7
15		.15	.85	1554.04		330	350		65	100		7
16		0.00	—									
17		.20	1.13	1562.05		300	360		70	100		10
18		.13	.74	1564.65		300	350		65	100		7
19		.13	.74	1567.14		330	360		70	100		7
20		0.00	—									
21		.20	1.13	1570.16		300	350		75	100		10
22		.11	.61	1572.43		320	350		70	100		6
23		.13	.74	1574.91		340	350		70	100		8
24		0.00	—									
Average		.155	.761	—	500	345	—	—	—	—	—	

METER VOL. END 1574.91
START 1526.01
SAMPLE VOL. 53.23 ft^3

METER CORR 1.0488
CORR.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.2" H_2O	30.02

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Nozr(Ideal)=
% H_2O = Nozr(Actual)=
=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	157	-	100	=	57
#2	110	-	100	=	10
#3	2	-	0	=	2
				Total	69

#4	g(End)		g(Start)		Grams
Silica Gel	157.6	-	145.3	=	12.3
				Total Vol. H_2O	21.3 ml

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PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft^3/min — Before — After

Sampling Time Per Point, Min: 5

ISOKINETICS = 106

TEST NUMBER 15
DATE
OPERATOR JR
FUEL Reload
SITE B
PROBE LOCATION ESP OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Out	Meter	O_2, %	Vac.
1		.45	.65	844.880	340	270	280	70		82		5
2		.46	.66	848.020	345	275	275	60		92		5
3		.48	.69	851.160	345	280	280	60		85		5
4		.49	.71	854.432	345	285	280	59		88		5.1
5		.50	.725	857.735	345	285	280	58		88		
6		.46	.66	860.820	345	290	270	58		90		4.8
7		.52	.675	864.219	342	250	280	58		92		5.2
8		.52	.675	867.438	342	260	270	58		92		5
9		.50	.725	870.820	342	260	270	58		92		5
10		.58	.80	874.109	345	260	285	60		95		6.5
11		.54	.70	877.241	350	260	280	62		98		
12		.60	.80	880.560	355	270	280	62				
13		.67	.9	884.585	355	240	295	58		98		7.5
14		.67	.90	888.180	355	260	280	58		98		7.5
15		.68	.91	891.809	350	275	280	62		98		7.5
16		.79	1.075	895.675	355	280	280	58		100		
17		.65	.88	899.142	350	275	290	60		100		7.0
18		.80	1.09	903.000	350	280	280	60		100		8.0
19		.57	.76	906.332	350	280	270	62		100		7
20		.62	.84	909.140	350	250	285	60		100		7.1
21		.62	.54	912.620	350	260	285	60		100		7
22		.58	.79	916.000	345	260	280	60		100		7
23		.50	.68	919.415	340	260	280	60		100		
24		.60	.80	922.850	345	260	280	58		102		7
Average		.5833	.7889		347.54							

METER VOL. END 922.05 START 841.25 SAMPLE VOL. 81.1 ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	6" H2O	30.2

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .247
% =

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	180	100	80
#2	118	100	18
#3	2.5	0	2.5
Total			

#4	g(End)	g(Start)	Δgrams
Silica Gel	178.5	160.6	17.9

Total Vol. H_2O 118.4 ml

PARTICULATE

DATA

*. Probe Heater failed at 3rd Point

Sampling Time Per Point, Min
4

Leak Check Rate

	Vac in. Hg	ft^3/min
Before	25	0.00
After		

ISOKINETICS = 93.2%

TEST NUMBER 16
DATE 2/22/78
OPERATOR JKC
FUEL Reload
SITE B
PROBE LOCATION BLROUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2,%	Vac.
1		.22	1.57	1578.80	—	300	320		65	75		9
2		.17	.95	1581.66	—	320	320		70	80		6
3		.17	.95	1584.53	—	350	350		70	80		5
4		.15	.85	1587.29	—	350	340		70	80		5
5		.33	1.7	1590.88	510	280	330		70	85		10
6		.20	1.1	1594.05	—	200	300		70	85		6
7		.20	1.1	1597.1	—	200	310		65	85		6
8		0.00										
9		.26	1.49	1600.58	510	200	310		70	90		8
10		.15	.85	1603.26	—	220	300		65	90		5
11		.21	1.2	1606.41	—	210	310		65	90		6
12		0.00										
13		.31	1.8	1610.02	510	220	320		60	95		10
14		.21	1.2	1613.15	—	230	220		65	95		7
15		.22	1.25	1616.42	—	220	330		70	95		7
16		0.00										
17		.31	1.8	1620.26	510	230	340		70	100		10
18		.20	1.15	1623.62	—	230	330		70	100		6
19		.23	1.3	1626.66	—	220	340		70	100		7
20		0.00										
21		.20	1.7	1630.33	510	220	350		70	100		7
22		.18	1.02	1633.21	—	220	350		70	100		6
23		.20	1.15	1636.20	—	220	340		70	100		7
24		.05	.28	1637.88	—	180	260		70	100		2
Average		.2505	1.2175		970°R							

METER VOL. END 1637.88
START 1575.38
SAMPLE VOL. 62.50 ft^3 68.10 Corr.

C_{Pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	29.925	30.05

Percent O_2 =

Static P = 1.7 "H_2O

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔF =
ΔH_g = Nor(Ideal)=
% H_2O = Nor(Actual)=
¶ = .33

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	150	100	50
#2	117	100	17
#3	3	0	3
		Total	70

#4 Silica Gel	g(End)	g(Start)	Δgrams
	166.4	149.1	17.3
		Total Vol. H_2O	87.3 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
5

Leak Check Rate

Vac in. Hg ft^3/min

Before

After

ISOKINETICS = 102.5

TEST NUMBER 16

DATE 2/7/73

OPERATOR JR

FUEL Reload

SITE B

PROBE LOCATION ESP Out

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.71	.94	926.450	365	240	210		80	80		3.5
2		.80	1.025	930.418	360	260	280		72	80		4.5
3		.87	1.12	934.600	360	260	280		72	80		—
4		.87	1.12	938.94	360	250	285		72	85		5
5		.73	.94	942.65	355	260	295		60	88		3
6		.89	1.15	946.310	385	260	295		60	88		5.5
7		.83	1.05	950.162	365	250	250		58	92		—
8		.84	1.06	950.224	375	300	310		55	90		—
9		.89	1.13	958.348	365	280	320		54	98		5
10		.98	1.25	962.550	375	250	280		54	98		5
11		.76	.96	966.180	362	240	280		56	98		5
12		.93	1.2	970.357	365	260	290		56	100		5.2
13		.91	1.185	974.522	370	245	260		58	98		5
14		.93	1.2	978.645	355	290	300		58	100		—
15		.93	1.2	982.628	378	290	300		60	100		5.2
16		1.0	1.29	985.834	380	275	290		62	102		6
17		.90	1.16	990.878	378	275	285		65	108		—
18		.92	1.19	994.899	370	270	285		62	102		5.8
19		.8	1.025	998.710	375	240	270		58	102		—
20		.94	1.2	1003.010	380	250	270		60	102		—
21		.88	1.12	1006.938	380	250	275		60	102		5
22		1.4	1.80	1012.110	385	260	280		62	103		7
23		1.4	1.8	1016.678	382	265	275		62	102		7
24		.88	1.12	1020.475	375	260	275		64	102		4.5
Average		.9162	1.1764		370							

METER VOL. END 1020.475

START 923.02

SAMPLE VOL. 97.455 ft^3

ΔP_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.537	6.0" H_2O	30.05

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .247

Ψ = 1.45

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	152.5	-	100	=	52.5
#2	138	-	100	=	38
#3	5.5	-	0	=	5.5
				Total	96

#4 Silica	c(End)		c(Start)		Δgrams
	14.2	-	152.2	=	22

Total Vol. H_2O 118 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 99 %

TEST NUMBER 17

DATE 219128

OPERATOR JEC

FUEL Reload

SITE B

PROBE LOCATION BLR OUT

Sampling Time Per Point, Min
3

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.28	1.55	1641.23	510	250	300		70	75		—
2		.17	1.0	1643.47	500	250	310		70	75		5
3		.20	1.15	1645.93	500	240	320		70	75		6
4		.04	.24	1647.08	460	180	340		70	80		1
5		.30	1.63	1649.73	510	180	350		70	80		10
6		.21	1.2	1652.13	510	240	360		60	85		7
7		.18	1.0	1654.35	510	220	350		65	85		5
8		0.00										
9		.38	2.1	1657.31	530	200	350		65	90		10
10		.24	1.35	1659.82	560	210	350		55	90		7
11		.26	1.49	1662.5	520	220	340		55	90		7
12		0.00										
13		.24	1.35	1662.5	520	200	350		60	90		7
14		.17	.96	1666.49	560	220	360		60	95		5
15		.23	1.3	—	540	210	360		60	100		6
16		0.00										
17		.35	2.0	1672.35	540	200	360		65	100		10
18		.14	.80	1674.27	520	220	350		65	100		5
19		.20	1.1	1676.52	520	200	350		60	100		—
20		0.00										
21		.28	1.6	1679.03	520	200	360		70	100		2
22		.15	.85	1681.01	530	210	360		70	100		5
23		.14	.80	1683.1	500	200	360		70	100		5
24		.09	.51	1684.43	480	190	360		70	100		3
Average		.2125	1.148		417							

METER VOL. END 1684.43

START 1638.54

SAMPLE VOL. 45.89 ft³ 49.96 cm³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.8" H_2O	29.94

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .381

= .37

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	136	-	100	=	36
#2	112	-	100	=	12
#3	2	-	0	=	2
				Total	50

#4	g(End)		g(Start)		Δgrams
Silica Gel	170	-	158	=	12

Total Vol. H_2O 62 ml

PARTICULATE

DATA

1 Mono (Inclinc 1.67
2. " " 1.15

Sampling Time Per Point, Min
4.0

Leak Check Rate — Vac in. Hg — ft³/min — Before — After

ISOKINETICS = 102.6%

TEST NUMBER 17
DATE 2/9/78
OPERATOR RAP
FUEL Reload
SITE B
PROBE LOCATION Main OUT

Sample Point	Time	METER CONDITIONS ΔPs	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2,%	Vac.
1		.27	.80	1023.38	505	230	250		68	98		4.5
2		.28	.83	1026.18	505	240	260		62	98		4.5
3		.24	.72	1028.76	505	280	270		62	98		4.0
4		.35	1.02	1031.86	505	300	260		60	100		5.0
5		.36	1.08	1034.93	505	290	270		66	102		5.0
6		.24	.70	1037.42	510	250	305		68	108		4.2
7		.33	.95	1040.31	530	250	300		68	110		5.0
8		.30	.85	1043.08	540	250	295		67	110		4.5
9		.41	1.18	1046.18	540	285	300		68	112		5.8
10		.43	1.18	1049.263	540	307	300		65	112		5.8
11		.41	.84	1052.16	525	250	285		78	112		4.2
12		.37	.74	1054.68	500	320	320		68	115		4.8
13		.44	.88	1057.37	510	330	320		70	115		5.0
14		.30	.48	1059.40	520	250	260		72	115		4.0
15		.34	.54	1061.58	575	310	300		76	115		4.5
16		.36	.58	1063.800	570	320	305		70	115		
Average		.321 / .37	.931 / .616	28.659 / 14.537	518.5 / 573							

Cp .837

Cp .666

METER VOL. END 1063.800
START 1020.604
SAMPLE VOL. 43.196 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	-6.2" H_2O	29.94

Percent O_2 =

12' probe C_p - .837
6' probe C_p - .666

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔT =
ΔHg = Noz(Ideal)=
% H_2O = 6 Noz(Actual)= .313
= .68

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	131	100	31
#2	114	100	14
#3	0	0	0
		Total	45

#4 Silica Gel	g(End)	g(Start)	Grams
	165.2	154.2	11.0
		Total Vol. H_2O	56 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 100.1%

TEST NUMBER 19
DATE 2/17/78
OPERATOR Rapp + SP
FUEL Southwest
SITE B
PROBE LOCATION RCP Out

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1	11:07	.19	1.08	1686.95	495		320		70	80		7.2
2		.135	.77	1689.87	500		315		70	80		5.2
3		.135	.77	1691.81	490		305		68	82		5.0
4		.065	.37	1692.13	490		305		68	54		3.3
5		.225	1.30	1695.61	500		300		72	88		7.3
6		.14	.80	1697.52	510		300		62	88		5.2
7		.15	.85	1699.51	515		240		68	90		5.3
8		0.00										
9		.21	1.25	1701.93	525		300		70	92		7.2
10		.145	.82	1703.89	530		295		58	93		5.2
11		.155	.87	1705.90	520		300		60	95		5.5
12		0.00										
13		.20	1.13	1708.17	500		300		70	98		6.8
14	12:17	.11	.63	1709.90	505		300		70	99		4.6
15		.125	.71	1711.71	520		300		70	100		5.0
16		Negative										
17		.16	.92	1713.77	495		320		72	100		5.8
18		.12	.67	1715.50	500		300		75	100		4.8
19		.125	.71	1717.30	500		300		68	102		5.1
20		0.00										
21	12:47	.19	1.06	1719.50	500		305		70	102		6.3
22		.11	.63	1721.19	500		305		72	103		4.7
23		.10	.57	1722.79	490		305		70	103		4.4
24		.035	.20	1723.716	485		305		72	103		2.8
Average		.141	.806		503.5							

METER VOL. END 1723.716
START 1684.605
SAMPLE VOL. ft^3

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	-1.2	29.92

Percent O_2 =

Meter Corr. 1.0836

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔHg = Noz(Ideal) =
% H_2O = Noz(Actual) = .301
Y = .325

Imp.	Vol. (End)	Vol. (Start)	ΔVol. (ml)
#1	124	100	24
#2	118	100	18
#3	0	0	0
		Total	42

#4 Silica Gel	g (End)	g (Start)	Δgrams
	161.1	150.1	11.0

Total Vol. H_2O 53 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
4

Leak Check Rate — Vac in. Hg — ft³/min

Before

After

ISOKINETICS = 102 %

TEST NUMBER 18

DATE 2/17/78

OPERATOR JEL

FUEL Southeast

SITE B

PROBE LOCATION Mech Out

	Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
Cp .837	1		.18	.11	1062.23	480	250	360		70	90		7
	2		.20	1.2	1070.56	490	260	300		65	95		7
	3		.15	.90	1073.52	490	280	250		65	95		6
	4		.30	1.8	1078.54	480	300	320		65	100		9
	5		.26	1.5	1081.14	490	310	330		60	100		8
	6		.11	.65	1084.65	480	200	310		70	100		4
	7		.18	1.1	1087.79	490	240	320		70	100		6
	8		.14	.85	1089.63	490	280	320		65	105		6
	9		.19	1.15	1092.78	490	300	340		65	100		8
	10		.20	1.2	1095.94	490	300	350		65	105		8
Cp .666	11		.25	1.0	1099.01	480	260	250		70	105		6
	12		.27	1.05	1102.04	480	320	300		65	105		7
	13		.25	1.0	1105.04	480	350	310		70	110		7
	14		.19	.75	1107.62	480	200	260		70	110		6
	15		.22	.89	1110.57	480	300	290		70	110		6
	16		.20	.80	1113.30	480	350	310		70	110		6
	Average		.191 / .23	1.145 / .915	31.94 / 17.36	490 / 480							

METER VOL. END / START 1064.00

SAMPLE VOL. ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	4.0" H_2O	24.92

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Nox(Ideal)=

% H_2O = Nox(Actual)= .377

$\bar{\gamma}$ = .32

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	138	-	100	=	38
#2	115	-	100	=	15
#3	0	-	0	=	0
				Total	53
#4 Silica Gel	g(End) 63.8	-	g(Start) 157.3	=	Δgrams 6.5

Total Vol. H_2O 59.5 ml

Cp 12' probe - .837

Cp 6' probe - .666

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 102 %

TEST NUMBER 19
DATE 2/18/78
OPERATOR RAP
FUEL Kentucky Cumberland
SITE B
PROBE LOCATION BL/2 OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1	9:32	.16	.92	1725.95	485		320		80	70		6.3
2		.12	.68	1727.80	500		310		80	72		4.8
3		.12	.68	1729.64	490		310		62	75		4.8
4		.07	.40	1731.06	490		310		62	78		3.5
5		.175	1.0	1733.26	485		315		62	80		6.0
6		.11	.62	1735.01	485		320		58	82		4.5
7		.13	.74	1736.91	500		320		56	82		5.2
8		Negative										
9		.16	.92	1739.01	475		315		63	82		6.6
10		.105	.60	1740.70	490		310		55	88		4.5
11		.13	.74	1736.91	500		320		56	82		5.2
12		Negative										
13		.16	.92	1739.01	475		315		63	82		6.6
14		.105	.60	1740.70	490		310		55	88		4.5
15		.115	.65	1742.45	500		300		60	90		4.8
16		Negative										
17	10:30	.17	.96	1744.58	500		300		62	92		6.5
18		.11	.63	1746.31	520		295		58	92		4.8
19		.13	.74	1748.19	510		300		63	93		5.2
20		0.00										
21		.13	.74	1755.79	495		305		65	98		5.5
22		.105	.60	1757.43	510		310		62	98		4.6
23		.10	.57	1759.05	510		310		63	100		4.6
24		.04	.225	1760.128	495		310		68	100		3.0
Average		.123	.70		496.2							

METER VOL. END 1760.128
START 1723.985
SAMPLE VOL. 39.562 ft^3 Corr.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.83	-.71 H_2O	29.74

Percent O_2 =

Meter Corr. 1.0836

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .381
=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	133	100	33
#2	112	100	12
#3	0	0	0
		Total	45

#4 Silica Gel	g(End)	g(Start)	Δgrams
	165.4	154	11.4

Total Vol. H_2O 56.9 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

ISOKINETICS = 104.3

TEST NUMBER 19
DATE 2/18/78
OPERATOR JC
FUEL Kent. Comb
SITE B
PROBE LOCATION Mach Out

Sampling Time Per Point, Min
4

Before
After

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.19	.79	1116.19	480	250	300		65	90		5
2		.21	.85	1119.11	480	250	310		55	90		6
3		.20	.82	1122.00	480	280	320		55	90		
4		.21	.85	1124.81	480	220	240		65	90		6
5		.25	1.1	1128.02	480	300	290		55	95		7
6		.22	.90	1131.00	480	310	320		60	95		6
7		.18	1.05	1134.12	480	190	250		70	100		7
8		.19	1.1	1137.30	480	240	300		60	100		7
9		.12	.72	1139.82	490	280	320		60	110		5
10		.20	1.2	1143.06	490	300	330		60	105		8
11		.195	1.15	1146.22	490	310	340		60	110		7
12		.18	1.05	1149.30	490	210	240		65	110		7
13		.20	1.2	1152.50	490	250	280		60	110		8
14		.15	.90	1155.35	490	300	320		60	110		6
15		.20	1.2	1158.53	490	320	340		60	115		8
16		.23	1.4	1162.06	490	320	350		65	120		9
Average		.213 / .184	.835 / 1.01	17.600 / 31.060	480 / 488							

METER VOL. END
START
SAMPLE VOL. 48.660 ft³ Total

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	-3.2" H_2O	29.74

Percent O_2 =

Cp 6' probe - .666
Cp 12' probe - .837

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)= .377

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	150	-	100	=	50
#2	112	-	100	=	12
#3	0	-	0	=	0
				Total	62

#4	c(End)		c(Start)		Δcrams
Silica	168.0	-	156.8	=	11.2

Total Vol. H_2O 173.2 ml

PARTICULATE

DATA

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

Sampling Time Per Point, Min
3

ISOKINETICS = 98.1 %

TEST NUMBER 20
DATE 2/18/78
OPERATOR JR + RP
FUEL Kent. Coal
SITE B
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.18	1.05	762.485	395	175	290					—
2		.11	.64	764.237	505	200	300		55	80		2.5
3		.11	.64	766.489	480	200	310		55	80		2.5
4		.06	.34	767.345	400	200	300		55	82		—
5		.23	1.31	768.710	450	200	300		58	85		—
6		.11	.64	771.515	510	220	300		60	88		3.5
7		.14	.80	773.412	510	220	300		60	88		4.5
8		0.00										
9		.24	1.38	775.890	510	200	310		60	90		5.0
10		.105	.68	777.575	510	200	310		60	90		—
11		.13	.745	779.382	510	220	300		60	90		—
12		0.00										
13		.185	1.05	781.515	—	175	300		62	88		5
14		.13	.745	783.329	505	185	295		60	92		—
15		.16	.925	785.385	508	200	275		62	96		5
16		0.00										
17		.23	1.31	787.515	505	200	300		62	100		5.2
18		.12	.68	789.510	510	250	320		62	100		—
19		.15	.86	791.460	510	230	325		62	100		—
20		0.00										
21		.21	1.2	793.760	505	200	320		62	102		5.3
22		.09	.52	795.320	500	200	320		62	102		4.3
23		.12	.68	797.012	500	210	315		62	102		—
24		.06	.34	798.298	480	210	310		66	105		—
Average		.143	.822		489.6							

METER VOL. END 798.398
START 760.19
SAMPLE VOL. 41.498 ft^3 Corr.

C_{pitot}	Stack Press. in. Hg-Gauge	Barometric Pressure
.831	1.2" H_2O	29.72

Percent O_2 =

Meter Corr. 1.0386

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Nos(Ideal)=
% H_2O = Nos(Actual)=

Imp.	Vol. (End)	Vol. (Start)	ΔVol. (ml)
#1	132	100	32
#2	108	100	8
#3	1	0	1
		Total	41

#4	g(End)	g(Start)	Δgrams
Silica Gel	161.8	153	8.8
		Total Vol. H_2O	49.8 ml

PARTICULATE

DATA

leak check at 1176.79
end at 1176.95
-.16 ft³

Sampling Time Per Point, Min.

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 101.29

TEST NUMBER 20
DATE 2/18/78
OPERATOR JEC
FUEL Kent Comb.
SITE B
PROBE LOCATION Mech. Out

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Out	Meter	O_2, %	Vac.
1		.15	.88	1165.17	490	280	310		70	100		—
2		.30	1.7	1169.88	490	280	320		50	100		7
3		.32	1.9	1172.96	490	300	240		60	100		8
4		.29	1.68	1176.79	490	310	240		65	105		7
5		.28	1.65	1180.81	490	300	250		60	110		7
6		.15	.88	1184.55	490	300	250		60	110		5
7		.20	1.2	1186.90	490	230	260		65	110		5
8		.20	1.2	1190.05	490	300	300		60	110		5
9		.21	1.25	1193.38	500	320	320		60	110		5
10		.20	1.2	1196.61	500	330	340		65	115		5
11		.26	1.1	1199.82	490	240	260		70	115		4
12		.28	1.15	1202.97	490	300	300		60	115		4
13		.28	1.15	1206.05	490	340	310		60	120		5
14		.15	.6	1208.35	490	220	280		65	120		2
15		.26	1.05	1211.55	490	260	300		60	120		5
16		.25	1.0	1214.36	490	320	310		70	120		5
Average		.23 / .246	1.36 / 1.22	34.20 / 17.750	492 / 490							

METER VOL. END
START 1162.25
SAMPLE VOL. 57.79 ft³

Point	Stack Press. In. Hg-Gauge	Barometric Pressure
	-4.2" H_2O	29.72

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal) =
% H_2O = Noz(Actual) = .377

Imp.	Vol. (End)	Vol. (Start)	ΔVol. (ml)
#1	156	100	56
#2	113	100	13
#3	0	0	0
		Total	69

#4 Silica	g(End)	g(Start)	Δgrams
	154.8	143.5	11.3

Total Vol. H_2O 80.3 ml

Cp 12' probe - .837
Cp 6' probe - .666

PARTICULATE

DATA

Leak Check Rate — Vac in. Hg — ft^3/min
Before
After

ISOKINETICS = 101.8

Sampling Time Per Point, Min
3

TEST NUMBER 21
DATE 2/20/78
OPERATOR JC + RB
FUEL Northfield
SITE B
PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS			TEMPERATURES, °F						O_2,%	Vac.
		ΔP_s	ΔH	Meter Reading	Stack	Probe	Oven	Impingers In	Impingers Out	Meter		
1		.19	1.1	1800.73	490	150	350		70	70		5
2		.12	.69	1802.54	490	200	350		60	70		—
3		.11	.64	1804.34	490	160	350		60	70		4
4		0.00										
5		.20	1.15	1806.83	490	150	350		70	75		5
6		.12	.69	1808.70	490	150	350		65	75		3
7		.14	.80	1810.67	490	150	350		55	75		4
8		0.00										
9		.24	1.4	1813.19	500	150	360		60	80		5½
10		.14	.80	—	510	170	360		60	82		3
11		.14	.80	1817.06	500	200	360		60	85		3
12		0.00										
13		.17	.98	1819.20	500	160	360		60	90		5
14		.10	.57	1820.94	500	200	360		55	90		3
15		.13	.75	1822.82	500	200	360		60	90		—
16		0.00										
17		.23	1.30	1825.25	500	150	380		70	90		7
18		.18	1.05	1827.42	570	200	370		65	90		5
19		.13	.75	1829.21	500	220	360		70	95		4.5
20		0.00										
21		.19	1.1	1831.58	510	180	360		70	100		6
22		.13	.749	1833.39	570	190	360		70	100		5
23		.12	.69	1835.14	500	200	360		70	100		4
24		.10	.56	1836.90	490	190	340		70	100		3
Average		.1515	.8720		498							

METER VOL. END 1836.90
START 1798.34
SAMPLE VOL. 41.92 ft^3 corr.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.337	-1.3" H2O	29.66

Percent O_2 =

Meter corr. - 1.0886

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
$\Delta H_@$ = Noz(Ideal)=
% H_2O = Noz(Actual)= .381
= .325

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	122	100	22
#2	107	100	7
#3	5	0	5
		Total	44

#4 Silica Gel	g(End)	g(Start)	Grams
	165.9	159.2	6.7

Total Vol. H_2O 50.7 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 98.2

TEST NUMBER 21

DATE 2/22/78

OPERATOR JR

FUEL Hatfield

SITE B

PROBE LOCATION Mach. Out

Sampling Time Per Point, Min
4

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.21	.85	217.948	495	275	275		58	82		3.8
2		.26	1.05	221.162	495	275	275		—	—		4.5
3		.24	.96	224.280	490	320	275		58	82		4.1
4		.25	1.0	227.392	490	275	270		58	84		5
5		.245	.98	230.482	490	300	290		60	86		4.8
6		.30	1.2	233.832	490	320	300		60	88		5
7		.11	.64	236.328	492	230	262		62	92		3.2
8		.18	1.05	239.498	498	220	260		64	92		—
9		.18	1.05	242.646	500	250	260		62	96		5
10		.23	1.35	246.244	502	270	270		62	98		6
11		.26	1.5	249.940	495	270	280		62	98		6.2
12		.26	1.50	254.900	492	235	250		64	100		6.2
13		.26	1.50	257.222	498	245	200		64	102		6.2
14		.26	1.50	260.900	500	280	280		66	102		6.5
15		.30	1.76	264.820	498	290	300		66	102		7
16		.29	1.7	268.631	495	290	300		70	106		7
Average		.2508 / .232	1.01 / 1.355	18.87 / 34.80	491.66 / 497							

METER VOL. END

START 214.962

SAMPLE VOL. 5767 ft³ Total

$C_{p,tot}$	Stack Press. In. Hg-Gauge	Barometric Pressure
	-3.8" H2O	29.65

Percent O_2 =

Cp 6' Probe - .666

Cp 12' Probe - .837

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .377

Imp.	Vol. (End)	Vol. (Start)	ΔVol. (ml)
#1	128	100	28
#2	124	100	24
#3	1	0	1
		Total	53
#4 Silica	g(End) 169.3	g(Start) 156.3	Δgrams 13
		Total Vol. H_2O	66 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 100.8

TEST NUMBER 22

DATE 2/20/78

OPERATOR JC

FUEL Hat Field

SITE B

PROBE LOCATION BLR OUT

Sampling Time Per Point, Min
3

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.13	.74	1838.74	490	150	250		70	80		5
2		.12	.69	1840.6	510	150	290		65	80		5
3		.10	.56	1842.3	510	170	310		60	90		4
4		.10	.56	1843.8	500	160	320		60	90		4
5		.18	1.02	1846.00	490	150	360		60	90		8
6		.11	.63	1847.72	500	180	360		60	90		5
7		.11	.63	1849.45	490	200	360		60	90		5
8		0.00										
9		.13	.74	1851.31	500	160	360		70	90		6
10		.10	.56	1852.91	510	200	370		60	90		5
11		.09	.50	1854.45	490	200	370		60	95		5
12		0.00										
13		.20	1.12	1856.69	500	160	360		70	100		8
14		.14	.79	1858.58	510	190	360		65	100		6½
15		.10	.56	1860.19	490	200	360		65	100		5
16		0.00										
17		.20	1.12	1862.41	500	180	360		70	100		9
18		.10	.79	1864.35	500	190	360		60	105		7
19		.12	.69	1866.01	500	190	360		60	110		5
20		0.00										
21		.19	1.1	1868.15	500	150	360		65	110		9
22		.10	.79	1870.01	500	180	360		60	110		10
23		.09	.51	1871.53	490	200	360		65	110		9
24		0.00										
Average		.127	.739		500							

METER VOL. END 1871.55

START 1836.90

SAMPLE VOL. 27.72 ft³ Corr.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	−1.4 in H_2O	29.60

Percent O_2 =

Meter Corr. 1.0286

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .381

Imp.	Vol. (End)	Vol. (Start)	ΔVol. (ml)
#1	138	100	38
#2	108	100	8
#3	0	0	0
		Total	46

#4	g(End)	g(Start)	Δgrams
Silica Gel	159.0	157.5	7.5

Total Vol. H_2O 53.5 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

ISOKINETICS = 102.3

Sampling Time Per Point, Min
4

Before

After

TEST NUMBER 22

DATE 2/20/78

OPERATOR RMP

FUEL Hat Field

SITE B

PROBE LOCATION Mean out

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.19	1.13	1272.67	480	250	250		68	98		5.0
2		.23	1.35	1275.61	480	275	275		63	98		5.5
3		.19	1.13	1278.851	480	310	300		62	100		4.8
4		.24	1.40	1282.369	492	310	310		62	100		5.5
5		.23	1.35	1285.81	488	310	310		62	102		6
6		.12	.71	1288.378	488	210	260		68	104		4
7		.16	.94	1291.378	491	230	280		68	106		5
8		.145	.85	1294.160	498	275	295		62	108		—
9		.20	1.18	1297.390	498	275	295		62	108		6.5
10		.24	1.40	1300.818	499	275	295		62	110		7.5
11		.23	.94	1305.811	488	210	220		62	110		6
12		.30	1.23	1307.020	490	340	270		62	110		7.1
13		.30	1.23	1310.461	488	340	300		62	110		8
14		.175	.725	1313.001	492	250	260		64	110		5.5
15		.23	.94	1345.86	492	260	290		64	110		7.0
16		.24	.98	1318.770	492	270	300		64	110		7.1
Average		.1945 / .245	1.09	32.087 / 17.952	489.4 / 490							

METER VOL. END 1318.770

START 1269.73

SAMPLE VOL. 32.087 ft³

Pitot	Stack Press. In. Hg-Gauge	Barometric Pressure
	-1.9" H_2O	29.60

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .377

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	142	-	100	=	42
#2	118	-	100	=	18
#3	3	-	0	=	3
				Total	63

#4 Silica	g(End)		g(Start)		Δgrams
	.676	-	155.6	=	12.0

Total Vol. H_2O 75 ml

CP 6' probe - .666

CP 12' probe .837

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

ISOKINETICS = 104.1

TEST NUMBER 23

DATE 2/23/78

OPERATOR JC

FUEL Kent. Comb.

SITE B

PROBE LOCATION Pole Out

Sampling Time Per Point, Min
3.0

Before

After

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.25	1.35	1874.562	510	220	330		56	72		7
2		.195	1.1	1876.841	518	220	330		56	72		6.8
3		.18	1.01	1878.160	508	240	330		58	72		—
4		0.00										
5		.36	2.05	1882.238	540	250	330		60	74		9.8
6		.195	1.1	1884.535	555	220	320		62	80		—
7		.19	1.08	1886.720	550	220	320		62	80		5.1
8		0.00										
9		.39	2.2	1889.820	555	210	320		60	82		10
10		.26	1.45	1892.420	555	220	330		68	88		—
11		.26	1.45	1894.001	560	220	330		68	88		7.2
12		0.00										
13		.36	2.05	1898.030	560	210	320		62	88		10
14		.24	1.35	1900.552	578	220	320		62	0		
15		.26	1.45	1903.198	578	240	320		62	92		
16		0.00										
17		.36	2.05	1906.280	558	210	320		62	94		10
18		.26	1.45	1908.850	570	210	320		62	94		
19		.25	1.40	1911.350	580	240	320		64	94		
20		0.00										
21		.34	1.85	1914.250	585	210	320		66	100		
22		.24	1.35	1916.722	575	210	320		68	100		7.5
23		.24	1.35	1919.178	575	220	310		68	102		7.5
24		0.00										
Average		.268	1.505		556.1							

METER VOL. END 1919.178

START 1871.646

SAMPLE VOL. 51.743 ft³ Corr

Pitot	Stack Press. In. Hg-Gauge	Barometric Pressure
	-2.0"/H_2O	29.86

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .381

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	148	-	100	=	48
#2	113	-	100	=	13
#3	0	-	0	=	0
				Total	61
#4	g(End)		g(Start)		Δgrams
Silica Gel	172.2	-	160.3	=	11.9
				Total Vol. H_2O	22.9

Meter. Corr. - 1.0886

PARTICULATE

DATA

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

ISOKINETICS = 100.1 %

Sampling Time Per Point, Min
4

TEST NUMBER 23
DATE 2/23/18
OPERATOR RMP
FUEL Kraft. Comb
SITE B
PROBE LOCATION Mock Out

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.33	1.30	1322.87	530	290	305		65	90		8.5
2		.39	1.55	1326.63	520	310	310		62	90		9.8
3		.39	1.55	1330.39	520	320	320		65	90		10.0
4		.44	1.70	1334.31	525	250	250		68	95		10.5
5		.50	1.92	1338.42	520	260	270		67	97		11.8
6		.50	1.92	1342.50	520	320	310		68	98		12.0
7		.34	1.90	1346.64	535	250	250		61	100		11.8
8		.35	1.95	1350.75	535	265	255		63	100		11.8
9		.28	1.58	1354.47	540	320	280		65	102		10.0
10		.38	1.85 max	1358.53	545	300	300		62	102		11.8
11		.42	1.85 max	1362.51	540	305	305		60	105		12.0
12		.38	2.18	1366.70	550	310	300		68	105		12.2
13		.41	2.3	1371.94	550	295	300		61	105		12.2
14		.43	2.4	1375.249	545	300	320		61	105		12.4
* Nozzle Change To .312												
15		.52	1.55	1378.91	540	260	260		68	110		10.5
16		.50	1.45	1382.502	540	240	290		60	110		10.2
Avg Nozzle .377		.373	2.00	32.749	542.5							
Cp .377 .312		.51	1.50	7.253	540							
Cp .666 Average		.425	1.66 / 1.809	23.200	522.5							

Cp .666

Cp .937

METER VOL. END
START
SAMPLE VOL. 63.202 ft^3

C_{Pitot}	Stack Press. In. H2O-Gauge	Barometric Pressure
	-4.5 H_2O	29.86

Percent O_2 =

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
ΔH_g = Noz(Ideal)=
% H_2O = Noz(Actual)=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	138	100	38
#2	131	100	31
#3	5	0	5
		Total	74
#4 Silica Gel	178.5	160.0	18.5
		Total Vol. H_2O	92.5 ml

Cp 6' probe - .666

Cp 12' probe - .937

PARTICULATE

DATA

Sampling Time Per Point, Min
3

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 101.6

TEST NUMBER 24

DATE 3/2/78

OPERATOR JR

FUEL Southeast

SITE B

PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.25	.65	1921.050	550	170	330		70	80		4.5
2		.21	.55	1922.635	575	230	320		62	82		
3		.17	.44	1924.088	550	230	320		70	82		3
4		.06	.16	1925.000	520	210	320		72	88		
5		.28	.745	1926.950	520	170	320		72	88		5
6		.175	.46	1928.425	545	170	320		68	88		3.3
7		.190	.51	1930.050	555	175	320		68	92		3.8
8		0.00										
9		.245	.65	1931.790	545	180	320		68	92		—
10		.165	.44	1933.205	560	180	320		68	94		4.0
11		.18	.48	1934.688	555	210	320		68	94		3.8
12		0.00										
13		.29	.75	1936.582	520	185	320		68	96		5
14		.195	.5	1938.110	545	215	320		62	98		4.2
15		.195	.5	1939.635	560	215	310		62	100		—
16		0.00										
17		.3	.775	1941.505	520	190	310		64	100		6
18		.18	.46	1942.945	545	200	315		68	102		4.8
19		.17	.44	1944.375	545	210	320		64	102		4.8
20		0.00										
21		.23	.6	1946.022	520	195	320		68	102		
22		.17	.44	1947.490	535	230	320		68	102		3.5
23		.175	.45	1948.895	540	230	320		68	102		3.6
24		0.00										
Average		.2015	.5263		543							

METER VOL. END 1948.845

START 1919.26

SAMPLE VOL. 32.26 ft³ Corr.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.7" H_2O	29.65

Percent O_2 =

Meter Corr. 1.0886

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)= .316

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	132	-	100	=	32
#2	102	-	100	=	2
#3	1	-	0	=	1
				Total	35

#4	g(End)		g(Start)		Δgrams
Silica Gel	169.5	-	161.5	=	8

Total Vol. H_2O 43 ml

PARTICULATE

DATA

Sampling Time Per Point, Min
4

Leak Check Rate

Vac in. Hg ft^3/min

Before

After

ISOKINETICS = 105.

TEST NUMBER 24

DATE 3/2/78

OPERATOR RAP

FUEL Southeast

SITE B

PROBE LOCATION Mech Out

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1	14:40	.32	.92	1385.64	530	250	300		72	98		4.5
2		.34	1.00	1388.68	530	260	290		68	99		4.8
3		.40	1.18	1392.00	540	290	310		67	100		5.8
4		.43	1.25	1395.34	540	295	310		66	100		6.5
5		.46	1.35	1398.82	540	290	290		69	102		7.5
6		.22	.64	1401.26	520	240	290		75	108		3.8
7		.28	.84	1404.04	530	250	295		65	108		5.0
8		.24	.72	1406.61	530	280	295		65	108		4.8
9		.33	.98	1409.56	530	285	290		66	111		6.5
10		.37	1.10	1412.63	530	290	290		67	113		7.0
11	15:54	.37	.60	1415.00	520	260	260		70	112		4.2
12		.46	.74	1417.62	520	300	280		68	113		5.5
13		.46	.74	1420.30	520	320	—		66	115		5.7
14		.30	.48	1422.59	520	250	310		70	115		4.0
15		.39	.72	1425.18	530	255	320		68	115		6.0
16		.38	.70	1427.613	520	300	310		64	115		5.8
Average		.339 / .343	.998 / .872	29.987 / 15.063	532 / 546							

METER VOL. END

START 1382.648

SAMPLE VOL. 45.058 ft^3

Spitot	Stack Press. In. Hg-Gauge	Barometric Pressure
	-5.7" H_2O	29.65

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)= .313

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	134	-	100	=	34
#2	122	-	100	=	22
#3	0	-	0	=	0
				Total	56
#4 Silica	g(End) 12.6	-	g(Start) 162.6	=	Δgrams 10
				Total Vol. H_2O	66 ml

Cp 12' probe - .877

Cp 6' probe - .666

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 105 %

TEST NUMBER 25

DATE 3/3/78

OPERATOR JEC

FUEL Kent. Coal

SITE B

PROBE LOCATION BLROT

Sampling Time Per Point, Min
3

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.31	.80	1951.28	570	170	310		80	80		4
2		.24	.64	1953.04	560	180	310		60	80		3
3		.19	.52	1954.82	560	190	320		60	80		—
4		.23	.60	1956.55	540	160	340		70	80		2
5		.34	.89	1958.55	570	190	360		70	90		5
6		.30	.79	1960.45	560	180	370		70	90		5
7		.29	.75	1962.34	560	180	360		60	90		4
8		.11	.28	1963.55	480	150	350		60	95		—
9		.32	.85	1965.55	560	160	350		60	95		4½
10		.18	.50	1967.01	570	180	350		60	100		3
11		.20	.52	1968.59	540	170	350		60	100		3
12		0.00										
13		.29	.75	1970.43	540	150	350		60	100		4
14		.21	.55	1972.01	560	170	350		60	100		3½
15		.22	.59	1973.63	560	185	350		55	105		3
16		0.00										
17		.20	.52	1975.19	560	150	360		65	105		4
18		.19	.50	1976.73	500	150	360		60	105		3
19		.20	.52	1978.39	560	160	360		60	106		4
20		0.00										
21		.28	.74	1980.20	540	650	360		65	105		4½
22		.22	.50	1981.83	560	180	360		60	110		4
23		.20	.52	1983.34	560	200	360		65	110		4
24		0.00										
Average		.236	.621		554							

METER VOL. END

START 1948.47

SAMPLE VOL. 37.415 ft³ corr.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.8" H_2O	29.45

Percent O_2 =

Meter Corr. = 1.0886

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Nozz(Ideal) =

% H_2O = Nozz(Actual) = .316

Imp.	Vol. (End)	Vol. (Start)	(Vol. (ml)
#1	142	- 100	= 42
#2	110	- 100	= 10
#3	0	- 0	= 0
		Total	52

#4	g(End)	g(Start)	(grams
Silica Gel	158.75	- 151.5	= 7.25

Total Vol. H_2O 59.25 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

ISOKINETICS = 107 %

TEST NUMBER 25

DATE 3/3/78

OPERATOR EAP

FUEL Kent. Coal

SITE B

PROBE LOCATION Muck out

Sampling Time Per Point, Min
4

Before

After

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1	10:25	.34	.56	1430.16	530	220	270		68	92		3.0
2		.41	.67	1432.72	520	270	275		68	92		3.5
3		.43	.70	1435.31	520	240	295		68	97		3.5
4		.45	.74	1438.05	520	245	255		68	100		3.8
5		.49	.80	1440.81	520	260	265		62	100		4.5
6		.47	.77	1443.495	520	290	285		63	102		4.5
7	11:16	.21	.57	1445.81	530	230	250		72	105		4.0
8		.32	.87	1448.64	530	248	270		63	105		5.0
9		.24	.66	1451.11	535	240	295		62	105		4.0
10		.33	.90	1454.00	530	290	310		62	107		5.1
11		.36	.98	1457.00	530	290	310		61	109		5.4
12		.33	.90	1459.91	530	240	285		68	111		5.2
13		.36	.98	1462.93	530	260	290		68	111		5.5
14		.38	1.05	1465.99	535	310	300		68	112		6.0
15		.45	1.25	1469.30	540	300	300		65	113		6.5
16		.46	1.28	1472.645	535	300	310		68	115		6.6
Average		.431 / .344	.707 / .855	15.703 / 29.150	522 / 532							

METER VOL. END

START

SAMPLE VOL. 44.853 ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	−5.7" H_2O	29.45

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = Δ =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)=

Imp.	Vol. (End)	Vol. (Start)	Δvol. (ml)
#1	138	100	38
#2	117	100	17
#3	2	0	2
		Total	57
#4 Silica Gel	c(End) 162.8	c(Start) 151.5	Δgrams 11.3

Total Vol. H_2O 68.3 ml

Cp 6' probe - .666

Cp 12' probe - .837

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

Sampling Time Per Point, Min: 3

Before

After

ISOKINETICS = 102.1%

TEST NUMBER 26

DATE 3/5/78

OPERATOR JR

FUEL Hat Field

SITE B

PROBE LOCATION BLR OUT

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.34	.89	1985.56	565	180	330		62	72		5
2		.23	.6	1987.278	560	210	330		60	74		—
3		.215	.55	1988.965	540	210	330		58	76		7.5
4		.22	.575	1990.688	535	200	330		58	76		—
5		.40	1.05	1992.947	555	200	340		68	80		5.5
6		.24	.65	1994.14	520	210	340		65	82		—
7		.14	.362	1995.44	540	200	330		58	82		—
8		.20	.525	1997.060	500	170	330		62	86		4.5
9		.175	.46	1998.555	545	180	310		62	85		4.5
10		.175	.46	2000.010	570	180	310		60	80		—
11		.18	.47	2001.525	575	185	310		60	88		—
12		0.00										
13		.31	.80	2003.450	535	190	330		64	90		5.25
14		.20	.525	2005.050	550	190	330		64	92		5
15		.21	.55	2006.67	545	190	330		64	86		5
16		0.00										
17		.27	.71	2008.505	520	180	330		65	86		6
18		.20	.525	2010.085	545	230	330		62	90		—
19		.21	.55	2011.715	540	230	330		62	90		5
20		0.00										
21		.22	.575	2013.320	530	245	330		62	90		
22		.19	.50	2014.860	545	245	330		62	90		
23		.19	.50	2016.375	545	245	330		70	100		
24		0.00										
Average		.225	.591		545.5							

METER VOL. END 2016.375

START 1993.48

SAMPLE VOL. 35.804 ft³ Corr.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-.165" H_2O	29.87

Percent O_2 =

Meter Corr. 1.0886

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) = .316

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	138	-	100	=	38
#2	104	-	100	=	4
#3	0	-	0	=	0
				Total	42

#4	g(End)		g(Start)		Δgrams
Silica Gel	1595	-	151.2	=	50.3

Total Vol. H_2O 50.3 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft^3/min

ISOKINETICS = 97.3

TEST NUMBER 26

DATE 3/5/78

OPERATOR RAP

FUEL Hatfield

SITE B

PROBE LOCATION Mech out

Sampling Time Per Point, Min
4

Before

After

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1	10:43	.45	1.13	1479.95	540	240	280		68	82		5.5
2		.45	1.08	1479.30	540	270	285		58	82		5.5
3		.34	.80	1482.11	540	300	295		55	85		4.8
4		.54	1.28	1485.62	545	300	300		50	88		6.5
5		.56	1.35	1489.14	545	300	305		50	90		6.5
6	11:40	.20	.47	1491.26	535	240	300		65	95		3.2
7		.31	.74	1493.93	535	260	305		55	95		4.8
8		.23	.55	1496.21	535	300	300		53	95		3.8
9		.34	.80	1498.96	540	310	310		54	97		5.3
10		.37	.88	1501.85	530	315	315		58	100		6.3
11	12:23	.39	.61	1504.21	520	265	260		65	100		4.8
12		.45	.70	1506.81	515	310	280		58	102		—
13		.43	.67	1509.23	515	310	310		60	105		—
14		.29	.45	1511.23	510	270	280		62	108		—
15		.39	.61	1513.64	525	270	300		62	108		5.5
16		.37	.58	1515.882	520	310	310		65	110		5.1
Average		.379 / .386	0.79	29.100 / 14.032	538 / 518							

Cp .837

Cp .666

METER VOL. END

START

SAMPLE VOL. 43.132 ft^3

Pitot	Stack Press. In. Hg-Gauge	Barometric Pressure
	-5.4" H2O	29.87

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	142	-	100	=	42
#2	108	-	100	=	8
#3	0	-	0	=	0
				Total	50

#4	g(End)		g(Start)		Δgrams
Silica	160.0	-	151.1	=	9.9

Total Vol. H_2O 59.9 ml

Cp 6' probe .666

Cp 12' probe .837

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 102.

TEST NUMBER 27

DATE 3/9/78

OPERATOR SR, RP

FUEL Kent. Comb

SITE B

PROBE LOCATION BLROUT

Sampling Time Per Point, Min
3

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.16	.91	2019.320	515	170	350		68	88		4.5
2		.11	.625	2021.590	520	180	330		68	88		4
3		.13	.74	2023.465	520	185	325		62	88		—
4		.11	.625	2025.175	500	190	325		66	88		4
5		.24	1.38	2027.680	500	175	315		64	90		5.1
6		.135	.775	2029.55	520	200	240		62	94		—
7		.14	.80	2034.465	535	210	260		66	92		5
8		0.00										
9		.225	1.3	2033.895	525	250	280		55	96		4.5
10		.125	.72	2035.762	530	260	290		58	96		—
11		.14	.80	2037.68	535	240	290		58	96		—
12		0.00										
13		0.22	1.38	2040.150	500	210	290		58	100		—
14		.14	.80	2042.134	525	260	300		58	102		—
15		.15	.85	2044.190	520	220	300		58	102		—
16		0.00										
17		.17	.96	2046.25	500	210	300		58	102		—
18		.135	.775	2048.068	510	205	305		60	106		4.8
19		.165	.94	2050.100	520	230	305		58	108		—
20		0.00										
21		.195	1.1	2052.330	520	230	305		68	110		—
22		.14	.80	2054.218	500	245	310		68	110		—
23		.12	.68	2055.950	520	230	310		68	110		—
24		0.00										
Average		.155	.893		516							

METER VOL. END

START 2017.72

SAMPLE VOL. 41.617 ft³ Corr.

$C_{p,tot}$	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.2" H_2O	29.92

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)=

Imp.	Vol.(End)		Vol. (Start)		ΔVol.(ml)
#1	135	-	100	=	35
#2	110	-	100	=	10
#3	0	-	0	=	0
				Total	45

#4	g(End)		g(Start)		Δgrams
Silica Gel	161.2	-	151.0	=	10.2

Total Vol. H_2O 55.2 ml

Meter corr. factor - 1.0386

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 98 %

TEST NUMBER 27

DATE 3/9/78

OPERATOR SC

FUEL Kent. Comb

SITE B

PROBE LOCATION Mackout

Sampling Time Per Point, Min
4

	Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Out	Meter	O_2, %	Vac.
Cp. 666	1		.20	.31	1518.13	480	360	320		70	100		1.5
	2		.31	.48	1520.23	490	280	330		60	100		2
	3		.32	.50	1522.37	500	300	330		65	100		3½
	4		.25	.38	1524.30	500	220	250		70	100		2
	5		.34	.54	1526.56	490	250	230		65	100		2½
	6		.35	.55	1528.82	490	300	250		65	100		3
Cp 837	7		.20	.54	1531.15	500	180	250		70	110		3
	8		.20	.54	1533.42	500	180	260		65	110		3
	9		.16	.42	1535.36	500	240	200		65	110		2
	10		.26	.70	1537.88	500	250	280		65	110		4½
	11		.28	.75	1540.42	500	250	270		60	112		5
	12		.25	.68	1542.84	490	180	300		70	120		4
	13		.27	.72	1545.37	500	230	300		60	120		5
	14		.24	.65	1547.76	500	280	320		60	120		4
	15		.35	.97	1550.65	500	300	300		60	120		6
	16		.35	1.0	1553.56	500	310	300		60	120		6½
	Average		.245 / .256	0.46 / .697	12.48 / 24.71	492 / 499							

METER VOL. END

START 1516.34

SAMPLE VOL. ft³

$C_{p,tot}$	Stack Press. In. Hg-Gauge	Barometric Pressure
	-40" H_2O	29.92

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal) =

% H_2O = Noz(Actual) =

Imp.	Vol. (End)	Vol. (Start)	ΔVol. (ml)
#1	138	100	38
#2	112	100	12
#3	0	0	0
		Total	50

#4	g(End)	g(Start)	Δgrams
Silica	160.0	153.0	7

Total Vol. H_2O 57 ml

Cp. 6' probe → 666

Cp 12' probe → 837

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 94.

Sampling Time Per Point, Min: 3

TEST NUMBER 201

DATE 3/9/78

OPERATOR JL

FUEL Kent Comb

SITE B

PROBE LOCATION BLR Oct

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.27	1.55	2058.62	500	160	250		70	90		—
2		.16	.92	2060.71	510	200	280		65	90		—
3		.15	.86	2062.70	500	210	310		70	90		4
4		0.00										
5		.22	1.23	2065.1	500	180	340		70	95		5
6		.14	.80	2066.99	510	210	350		65	95		4
7		.16	.91	2069.04	500	220	355		65	100		4½
8		0.00										
9		.245	1.4	2071.52	500	200	370		65	100		5½
10		.165	.95	2073.57	520	210	370		60	100		4
11		.17	.98	2075.64	520	220	360		60	100		4.5
12		0.00										
13		.20	1.15	2077.90	520	190	360		70	105		5
14		.12	.069	2079.65	520	190	300		70	105		—
15		.16	.92	2081.66	500	200	350		65	110		4½
16		0.00										
17		.25	1.45	2084.15	500	160	370		70	110		5½
18		.16	.92	2086.15	520	230	380		65	110		5
19		.15	.86	2088.09	510	230	370		70	110		5½
20		0.00										
21		.19	1.1	2090.30	520	170	380		70	110		5
22		.13	.75	2092.25	520	180	360		70	110		4
23		.14	.80	2094.12	520	180	360		70	110		4.5
24		.05	.29	2095.20	440	180	360		70	115		2
Average												

METER VOL. END

START 2050.05

SAMPLE VOL. 29.822 ft³ Corr.

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
.837	-1.4" H_2O	29.92

Percent O_2 =

Meter Corr. - 1.0836

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Nos(Ideal)=

% H_2O = Nos(Actual)=

Imp.	Vol.(End)	Vol. (Start)	ΔVol.(ml)
#1	141	100	41
#2	110	100	10
#3	0	0	0
		Total	51

#4	q(End)	q(Start)	Δgrams
Silica Gel	159.3	152	7.3
		Total Vol. H_2O	58.3 ml

PARTICULATE

DATA

Leak Check Rate

Vac in. Hg ft³/min

Before

After

ISOKINETICS = 99 %

Sampling Time Per Point, Min
4

TEST NUMBER 28B

DATE 2/9/75

OPERATOR JR

FUEL Kent. Coal

SITE B

PROBE LOCATION Mesh Out

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
1		.26	.72	1556.230	500	200	250		62	102		2
2		.30	.825	1559.040	515	240	280		58	105		2.2
3		.27	.74	1561.650	515	270	270		62	108		2.1
4		.32	.88	1564.400	510	275	275		60	110		3.0
5		.32	.88	1567.238	505	275	300		60	110		3.8
6		.17	.47	1569.260	500	180	280		62	112		2.8
7		.21	.575	1571.535	505	275	290		68	115		3
8		.18	.50	1574.600	505	265	290		64	118		3
9		.25	.68	1576.010	500	270	290		68	120		—
10		.28	.775	1578.575	500	280	300		64	120		3.8
11		.33	.52	1581.700	500	180	210		64	120		—
12		.23	.31	1582.495	490	230	210		64	120		2
13		.34	.54	1584.780	500	290	230		66	120		2
14		.21	.33	1586.160	500	290	230		66	120		—
15		.25	.39	1588.040	500	230	260		68	120		—
16		.23	.31	1590.800	500	230	260		68	120		—
Average		.256 / .265	.705 / .40	24.95 / 12.225	506 / 498							

Cp .837

Cp .666

METER VOL. END

START 1557.65

SAMPLE VOL. ft³

C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
	-4.0" H_2O	29.92

Percent O_2 =

Nomograph Setup

P_{meter} = C =

P_{stack} = T_{stack} =

T_{meter} = ΔP =

ΔH_g = Noz(Ideal)=

% H_2O = Noz(Actual)=

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1	128	-	100	=	28
#2	108	-	100	=	8
#3	0	-	0	=	0
				Total	36

#4	g(End)		g(Start)		Δgrams
Silica Gel	159.1	-	153.0	=	6.1

Total Vol. H_2O 42.1 ml

Cp 6' Probe = .666

Cp 12' Probe = .837

PARTICULATE LAB WORKSHEET

TEST NO. 2 Boiler Out (Inlet, Outlet) LOCATION Test Site B

Date 12-21-77 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			8	1	1		
DATE WT.			—	—	—		
TARE WT.	1		64.4182	67.8409	.7535		
	2		64.4161	67.8388	.7534		
	3		64.4156	67.8383	.7540		
	4		—	—	—		
AVG.			64.4166	67.8393	.7536		
POST TEST WTS.							
	1		64.5761	71.6559	.8598		
	2		64.5767	71.6562	.8597		
	3		64.5767	71.6563	.8597		
	4		—	—	—		
AVG.			64.5765	71.6561	.8597		
Δ WT.			.1599	3.8168	.1061		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 4082.8 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 3A Boiler Out (Inlet, Outlet) LOCATION Test Site 13

Date 1-5-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			–	–	–		
BEAKER NO.			4	2	5		
DATE WT.			–	–	–		
TARE WT.	1		64.1580	68.4664	.7572		
	2		64.1579	68.4650	.7575		
	3		64.1578	68.4643	.7576		
	4		–	–	–		
AVG.			64.1579	68.4652	.7574		

POST TEST WTS.

	1		64.2342	72.9858	.8717		
	2		64.2338	72.9861	.8717		
	3		64.2340	72.9863	.8715		
	4		–	–	–		
AVG.			64.2340	72.9860	.8716		
Δ WT.			.0761	4.5280	.1142		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 4711.1 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 3B multi.o.π (Inlet, Outlet) LOCATION Test Site B

Date 6-5-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—		—		
BEAKER NO.			5		3		
DATE WT.			—		—		
TARE WT.	1		64.0648		.7559		
	2		64.0627		.7558		
	3		64.0622		.7557		
	4		—		—		
AVG.			64.0632		.7558		
POST TEST WTS.							
	1		64.2023		1.1672		
	2		64.2027		1.1668		
	3		64.2027		1.1669		
	4		—		—		
AVG.			64.2024		—		
Δ WT.			.1392		.4111		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn _____ mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 4 Boiler Out (Inlet, Outlet) LOCATION Test Site B

Date 1-6-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.
BOTTLE NO.			—	—	—	
BEAKER NO.			6	3	6	
DATE WT.			—	—	—	
TARE WT.	1		69.0101	63.5534	.7430	
	2		69.0076	63.5510	.7435	
	3		69.0091	63.5508	.7435	
	4		—	—	—	
AVG.			69.0089	63.5517	.7433	

POST TEST WTS.

	1		69.1070	71.4135	.8915	
	2		69.1070	71.4138	.8916	
	3		69.1069	—	.8917	
	4		—	—	—	
AVG.			69.1070	71.4136	.8916	
Δ WT.			.0981	7.8619	.1483	

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 8108.3 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 1 multi-Cat (Inlet, Outlet) LOCATION Test Site 13

Date 1-6-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—		—		
BEAKER NO.			7		7		
DATE WT.			—		—		
TARE WT.	1		64.5839		.7510		
	2		64.5824		.7514		
	3		64.5815		.7514		
	4		—		—		
AVG.			64.5826		.7512		
POST TEST WTS.							
	1		64.6385		1.1252		
	2		64.6380		1.1247		
	3		64.6378		1.1246		
	4		—		—		
AVG.			64.6381		1.1248		
Δ WT.			.0555		.3736		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 429.1 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 6-Boiler Out (Inlet, Outlet) LOCATION Test Site B

Date 1-11-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			13	11	8		
DATE WT.			1-10-78	1-10-78	—		
TARE WT.	1		—	50.4354	.7604		
	2		64.4132	50.4358	.7612		
	3		64.4136	50.4357	.7613		
	4		—	—	—		
AVG.			64.4134	50.4356	.7610		
POST TEST WTS.							
	1		64.5452	61.6692	.9273		
	2		64.5451	61.6692	.9275		
	3		64.5450	61.6694	.9275		
	4		—	—	—		
AVG.			64.5451	61.6693	.9274		
Δ WT.			.1317	11.2337	.1664		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 11531.8 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 6 multi-Out (Inlet, Outlet) LOCATION Test Site B

Date 1-11-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—		—		
BEAKER NO.			14		4		
DATE WT.			1-10-78		—		
TARE WT.	1		69.0047		.7530		
	2		69.0042		.7535		
	3		69.0045		.7533		
	4		—		—		
AVG.			69.0045		.7533		

POST TEST WTS.

	1		—		1.2787		
	2		69.1069		1.2785		
	3		69.1066		1.2783		
	4		—		—		
AVG.			69.1068		1.2788		
Δ WT.			.1023		.5255		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 627.8 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 6 multi-Out (Inlet, Outlet) LOCATION Test Site

Date 1-11-78 Box No. _____ Eng. _____

Test Description Sizing + Combustables SASS Train

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		~~H2O RINSE~~	~~ACETONE RINSE~~	~~DRY FLASK~~	~~FILTER NO 1~~	~~FILTER NO 1~~	
BOTTLE NO.		10μ Cyclone	3μ Cyclone	1μ Cyclone	Filter Wash		
BEAKER NO.		17	18	9	19		
DATE WT.		1-13-78	1-13-78	1-10-78	1-13-78		
TARE WT.	1	64.1600	62.5527	49.6400	68.4652		
	2	64.1594	63.5522	49.6394	68.4652		
	3	64.1598	63.5519	49.6396	68.4653		
	4	—	—	—	—		
AVG.		64.1599	63.5523	49.6398	68.4652		

POST TEST WTS.

	1	64.2540	63.6618	49.8288	68.4773		
	2	64.2535	63.6618	49.8281	68.4767		
	3	64.2536	63.6612	49.8277	68.4764		
	4	—	—	—	—		
AVG.		64.2537	63.6614	49.8282	68.4768		
Δ WT.		.0938	.1091	.1884	.0116		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn _____ mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 7-Boiler-Out (Inlet, Outlet) LOCATION Test Site B

Date 1-12-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			15	12	10		
DATE WT.			1-10-78	1-10-78	—		
TARE WT.	1		64.0594	69.5590	.7593		
	2		64.0619	69.5591	.7586		
	3		64.0612	69.5592	—		
	4		—	—	—		
AVG.			64.0608	69.5591	.7590		
POST TEST WTS.							
	1		64.1897	79.6317	1.0054		
	2		64.1893	79.6317	1.0052		
	3		64.1892	79.6318	1.0054		
	4		—	—	—		
AVG.			64.1894	79.6317	1.0053		
Δ WT.			.1286	10.0726	.2463		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 104475 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 7 mult. Out (Inlet, Outlet) LOCATION Test Site B

Date 1-12-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

	Impinger Water Vol (ml)			
	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—		—		
BEAKER NO.			16		9		
DATE WT.			1-13-78		—		
TARE WT.	1		64.5837		.7487		
	2		64.5835		.7485		
	3		64.5834		—		
	4		—		—		
AVG.			64.5835		.7486		
POST TEST WTS.							
	1		64.7789		1.4115		
	2		64.7788		1.4111		
	3		64.7787		1.4110		
	4		—		—		
AVG.			64.7788		1.4112		
Δ WT.			.1953		.6626		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn _____ mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. Inlet-Out (Inlet, Outlet) LOCATION Test Site D

Date 1-11-78 Box No. _____ Eng. _____

Test Description Sizing SASS Train

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.		10μ Cyclone	3μ Cyclone	1μ Cyclone	Filter		
BEAKER NO.		#20	#21	#22	#23		
DATE WT.		1-19-78	1-19-78	1-19-78	1-19-78		
TARE WT.	1	67.8396	49.6418	63.5525	50.3062		
	2	67.8397	49.6415	63.5524	50.3061		
	3	67.8392	49.6413	63.5522	50.3061		
	4	—	—	—	—		
AVG.		67.8395	49.6415	63.5524	50.3061		

POST TEST WTS.

	1	67.9299	49.7081	63.6304			
	2	67.9297	49.7079	63.6302			
	3	67.9296	49.7079				
	4	—	—				
AVG.		67.9297	49.7080				
Δ WT.		.0902	.6665				

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn _____ mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 8 Boiler Out (Inlet, Outlet) LOCATION Test Site B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			28	24	13		
DATE WT.			1-26-78	1-25-78	1-25-78		
TARE WT.	1		63.5503	49.6420	.7488		
	2		63.5501	49.6422	.7488		
	3		63.5495	49.6423	.7485		
	4		—	—	—		
AVG.			63.500	49.6422	.7487		
POST TEST WTS.							
	1		63.7414	60.1595	.9343		
	2		63.7416	60.1598	.9344		
	3		—	60.1600	.9345		
	4		—	—	—		
AVG.			63.7415	60.1598	.9344		
Δ WT.			.2415	10.5176	.1857		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 10944.5 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 8 multi-Out (Inlet, Outlet) LOCATION Test Site B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			29	25	14		
DATE WT.			1-26-78	1-25-78	1-25-78		
TARE WT.	1		64.5791	50.3064	.7507		
	2		64.5790	50.3066	.7508		
	3		64.5787	50.3069	.7507		
	4		—	—	—		
AVG.			64.5789	50.3066	.7507		
POST TEST WTS.							
	1		64.8609	50.6041	1.0603		
	2		64.8601	50.6039	1.0608		
	3		—	50.6040	1.0610		
	4		—	—	—		
AVG.			64.8609	50.6040	1.0607		
Δ WT.			.2820	.2974	.3100		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 969.4 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 9 Boiler Out (Inlet, Outlet) LOCATION Test Site B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			30	26	11		
DATE WT.			1-26-78	1-25-78	1-25-78		
TARE WT.	1		69.0054	67.8377	.7651		
	2		69.0057	67.8375	.7651		
	3		69.0057	67.8371	—		
	4		—	—	—		
AVG.			69.0056	67.8374	.7651		
POST TEST WTS.							
	1		69.2618	73.6851	.9737		
	2		69.2620	73.6855	.9738		
	3		—	73.6858	.9739		
	4		—	—	—		
AVG.			69.2619	73.6855	.9738		
Δ WT.			.2563	5.8481	.2087		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 6313.1 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 9 multi Out (Inlet, Outlet) LOCATION Test Site B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			31	27	12		
DATE WT.			1-26-78	1-26-78	1-25-78		
TARE WT.	1		64.1564	50.4359	.7629		
	2		64.1567	50.4357	.7629		
	3		64.1560	50.4359	—		
	4		—	—	—		
AVG.			64.1564	50.4358	.7629		
POST TEST WTS.							
	1		64.3834	50.5276	1.0598		
	2		64.3834	50.5277	1.0599		
	3		—	50.5278	1.0600		
	4		—	—	—		
AVG.			64.3834	50.5277	1.0599		
Δ WT.			.2270	.0919	.2970		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 615.9 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 11A-Baker Cat (Inlet, Outlet) LOCATION Test Site B

Date 1-28-78 Box No. _____ Eng. _____

Test Description 100% Max OEA

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			–	–	–		
BEAKER NO.			34	32	15		
DATE WT.			1-28-78	1-28-78	1-28-78		
TARE WT.	1		69.5621	64.4179	.7540		
	2		69.5622	64.4175	.7539		
	3		69.5624	64.4176	–		
	4		–	–	–		
AVG.			69.5622	64.4177	.7539		
POST TEST WTS.							
	1		69.6966	72.3627	.9277		
	2		69.6962	72.3629	.9278		
	3		69.6965	72.3630	.9279		
	4		–	–	–		
AVG.			69.6964	72.3629	.9278		
Δ WT.			.1342	7.9452	.1739		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 8253.3 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 11B Mahout (Inlet, Outlet) LOCATION Test Site B

Date 1-28-78 Box No. _____ Eng. _____

Test Description Max. O.F.A. 100K

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.							
BEAKER NO.			35	33	16		
DATE WT.			1-28-78	1-28-78	1-28-78		
TARE WT.	1		68.4656	64.0641	.7615		
	2		68.4654	64.0639	.7616		
	3		68.4654	64.0639	—		
	4		—	—	—		
AVG.			68.4655	64.0640	.7615		
POST TEST WTS.							
	1		68.5215	64.2643	.8714		
	2		68.5213	64.2641	.8716		
	3		68.5212	64.2640	.8716		
	4		—	—	—		
AVG.			68.5213	64.2641	.8715		
Δ WT.			.0558	.2001	.1100		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 765.7 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 12A Boiler Out (Inlet, Outlet) LOCATION Test Site B

Date 1-29-78 Box No. _____ Eng. _____

Test Description Min O.F.A. 100K

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			37	36	17		
DATE WT.			1-29-78	1-28-78	1-29-78		
TARE WT.	1		64.5824	64.1589	.7638		
	2		64.5825	64.1588	.7636		
	3		64.5824	64.1588	.7636		
	4		—	—	—		
AVG.			64.5826	64.1588	.7637		
POST TEST WTS.							
	1		64.6767	71.3970	.8814		
	2		64.6765	71.3969	.8813		
	3		64.6764	71.3967	.8817		
	4		—	—	—		
AVG.			64.6765	71.3968	.8815		
Δ WT.			.0939	7.2380	.1178		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 7449.7 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 12B Mech Out (Inlet, Outlet) LOCATION Test Site 13

Date 1-28-78 Box No. _____ Eng. _____

Test Description Min O.E.A. - 100K

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.							
BEAKER NO.			39	38	18		
DATE WT.			1-28-78	1-28-78	1-28-78		
TARE WT.	1		63.5528	69.0083	.7590		
	2		63.5523	69.0079	.7589		
	3		63.5524	69.0080	.7588		
	4		—	—	—		
AVG.			63.5525	69.0081	.7589		
POST TEST WTS.							
	1		63.6409	69.1926	.8860		
	2		63.6407	69.1926	.8861		
	3		63.6407	69.1925	.8863		
	4		—	—	—		
AVG.			63.6408	69.1926	.8861		
Δ WT.			.0883	.1845	.1272		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 400.0 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 15 ESP OUT (Inlet, Outlet) LOCATION Test Site B

Date 2-6-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—		—		
BEAKER NO.			43		20		
DATE WT.			2-9-78		2-5-78		
TARE WT.	1		64.0625		.7490		
	2		64.0632		.7488		
	3		64.0631		.7487		
	4		—		—		
AVG.			64.0633		.7488		
POST TEST WTS.							
	1		64.0955		.7779		
	2		64.0957		.7781		
	3		64.0965		—		
	4		—		—		
AVG.			64.0956		.7780		
Δ WT.			0.323		.0292		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 61.5 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 15 (Inlet, Outlet) LOCATION Test Site B

Date 2-6-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			412	410	1.9		
DATE WT.			2-9-78	2-9-78	2-5-78		
TARE WT.	1		69.5630	63.5530	.7547		
	2		69.5623	63.5526	.7545		
	3		69.5624	63.5524	.7545		
	4		—	—	—		
AVG.			69.5626	63.5527	0.7541		
POST TEST WTS.							
	1		69.7967	86.1540	1.1832		
	2		69.7965	86.1539	1.1841		
	3		69.7966	86.1542	—		
	4		—	—	—		
AVG.			69.7966	86.1540	1.1837		
Δ WT.			.2340	22.6013	.429		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 23,264.4 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 16 Boiler Out (Inlet, Outlet) LOCATION Test Site B

Date 2-7-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			–	–	–		
BEAKER NO.			414	411	21		
DATE WT.			2-9-78	2-9-78	2-5-78		
TARE WT.	1		69.0088	64.5831	.7498		
	2		69.0082	64.5828	.7494		
	3		69.0084	64.5828	.7495		
	4		–	–	–		
AVG.			69.0085	64.5829	.7496		
POST TEST WTS.							
	1		69.2199	94.8613	1.1164		
	2		69.2201	94.8620	1.1169		
	3		69.2203	94.8622	–		
	4		–	–	–		
AVG.			69.2201	94.8613	1.1167		
Δ WT.			.2116	30.2784	.0367		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn _____ mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 16 (Inlet, Outlet) LOCATION Test Site 13

Date 2-7-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—		—		
BEAKER NO.			45		23		
DATE WT.			2-9-78		2-5-78		
TARE WT.	1		68.4650		.7532		
	2		68.4654		.7530		
	3		68.4649		.7530		
	4		—		—		
AVG.			68.4651		.0731		
POST TEST WTS.							
	1		68.4777		.7917		
	2		68.4774		.7920		
	3		68.4772		.7921		
	4		—		—		
AVG.			68.4774		.7914		
Δ WT.			.0123		.0388		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 51.1 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 17 (Inlet, Outlet) LOCATION Test Site B

Date 2-9-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			46	47	23		
DATE WT.			2-9-78	2-9-78	2-5-78		
TARE WT.	1		64.4167	50.4373	.7562		
	2		64.4165	50.4372	.7562		
	3		64.4164	50.4369	.7561		
	4		—	—	—		
AVG.			64.4165	50.4371	.7562		
POST TEST WTS.							
	1		64.6063	65.5203	1.0042		
	2		64.6065	65.5206	1.0044		
	3		64.6066	65.5207	1.0048		
	4		—	—	—		
AVG.			64.6065	65.5205	1.0045		
Δ WT.			.1900	15.0834	.2483		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 15,521.7 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 17 mach Out (Inlet, Outlet) LOCATION Test Site B

Date 2-9-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			50	48	24		
DATE WT.			2-9-78	2-9-78	2-5-78		
TARE WT.	1		64.1587	50.3060	.7594		
	2		64.1587	50.3059	.7592		
	3		64.1584	50.3056	.7592		
	4		—	—	—		
AVG.			64.1586	50.3058	.7593		
POST TEST WTS.							
	1		64.2356	50.6587	1.0148		
	2		64.2352	50.6581	1.0149		
	3		64.2356	50.6584	—		
	4		—	—	—		
AVG.			64.2355	50.6583	1.0149		
Δ WT.			.0769	.3525	.2556		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 68.5 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

9830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 18 Bake Out (Inlet, Outlet) LOCATION Test Site B

Date 2-17-78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			60	44	25		
DATE WT.			2-19-78	2-17-78	2-17-78		
TARE WT.	1		50.3070	49.6416	.7540		
	2		50.3065	49.6414	.7541		
	3		50.3064	49.6415	.7541		
	4		—	—	—		
AVG.			50.3066	49.6415	.7541		

POST TEST WTS.

	1		50.6066	66.4307	1.0040		
	2		50.6066	66.4310	—		
	3		50.6069	66.4311	—		
	4		—	—	—		
AVG.			50.6067	66.4309	1.0090		
Δ WT.			.3001	16.7894	.2549		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 17,344.4 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 18 MECH OUT (Inlet, Outlet) LOCATION Site B

Date 2/17/78 Box No. Eng.

Test Description

Dry Gas Meter Vol (ft^3)

Final

Initial

Δ DgV

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—			
BEAKER NO.			61	51	26		
DATE WT.			2-19-78	2-17-78	2-17-78		
TARE WT.	1		64.5853	67.8399	.7575		
	2		64.5841	67.8394	.7576		
	3		64.5841	67.8395	.7576		
	4		—	—	—		
AVG.			64.5845	67.8397	.7576		
POST TEST WTS.							
	1		64.6737	68.7359	1.0435		
	2		64.6735	68.7392	—		
	3		64.6742	68.7390	—		
	4		—	—	—		
AVG.			64.6739	68.7390	1.0435		
Δ WT.			.0894	.8993	0.2859		

Δ Vlc = ml LOAD klb/hr

Δ DgV = ft^3 O_2 %

Δ Mn 1,274.6 mgm REMARKS:

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PARTICULATE LAB WORKSHEET

TEST NO. 19 BLROUT (Inlet, Outlet) LOCATION Test Site B

Date 2/18/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			62	52	27		
DATE WT.			2/21/78	2/18/78	2/18/78		
TARE WT.	1		64.0642	68.4662	.7537		
	2		64.0638	68.4658	.7538		
	3		64.0637	68.4658	—		
	4		—	—	—		
AVG.			64.0639	68.4659	.7537		
POST TEST WTS.							
	1		64.3178	82.8227	.9999		
	2		64.3183	82.8229	—		
	3		64.3185	82.8234	—		
	4		—	—	—		
AVG.			64.3182	82.8230	.9999		
Δ WT.			.2543	14.3571	0.2462		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 C_2 _____ %

Δ Mn 14,857.6 ppm REMARKS: _____

PARTICULATE LAB WORKSHEET

TEST NO. 19 Mechout (Inlet, Outlet) LOCATION Test Site B

Date 2/18/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			64	53	28		
DATE WT.			2/21/78	2/18/78	2/18/78		
TARE WT.	1		64.4174	64.0646	.7493		
	2		64.4174	64.0641	.7494		
	3		64.4173	64.0642	—		
	4		—	—	—		
AVG.			64.4174	64.0643	.7493		
POST TEST WTS.							
	1		64.5446	64.6369	1.0267		
	2		64.5444	64.6365	1.0270		
	3		64.5443	64.6365	—		
	4		—	—	—		
AVG.			64.5444	64.6366	1.0269		
Δ WT.			.1270	0.5723	.2776		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 976.9 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8930-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 20 BLR OUT (Inlet, Outlet) LOCATION Site B

Date 2/18/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			65	54	29		
DATE WT.			2/21/78	2/19/78	2/18/78		
TARE WT.	1		67.8394	64.4177	.7332		
	2		67.8398	64.4174	.7329		
	3		67.8397	64.4174	.7328		
	4		—	—	—		
AVG.			67.8396	64.4175	.7330		
POST TEST WTS.							
	1		68.0959	77.8717	.9933		
	2		68.0961	77.8719	—		
	3		68.0962	77.8720	—		
	4		—	—	—		
AVG.			68.0961	77.8719	.9933		
Δ WT.			0.2565	13.4544	.2603		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 C_2 _____ %

Δ Mn 12,971.2 mgm REMARKS: _____

1830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 20 March OUT (Inlet, Outlet) LOCATION Site B

Date 2/18/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			66	55	30		
DATE WT.			2/21/78	2/19/78	2/18/78		
TARE WT.	1		64.1596	64.1591	.7475		
	2		64.1601	64.1588	.7474		
	3		64.1600	64.1587	.7474		
	4		—	—	—		
AVG.			64.1599	64.1589	.7474		
POST TEST WTS.							
	1		64.2880	64.6229	1.0637		
	2		64.2879	64.6229	1.0640		
	3		64.2879	—	—		
	4		—	—	—		
AVG.			64.2879	64.6229	1.0639		
Δ WT.			0.1280	.4640	.3169		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 908.5 mgm REMARKS: _____

5151-5 REV.

PARTICULATE LAB WORKSHEET

TEST NO. 21 BLROUT (Inlet, Outlet) LOCATION Test Site B

Date 2/20/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			67	56	31		
DATE WT.			2/21/78	2/19/78	2/20/78		
TARE WT.	1		69.5620	69.5621	.7569		
	2		69.5617	69.5620	.7570		
	3		69.5615	69.5620	.7570		
	4		—	—	—		
AVG.			69.5617	69.5620	.7570		
POST TEST WTS.							
	1		69.7600	81.1474	.9828		
	2		69.7601	81.1476	—		
	3		69.7601	81.1480	—		
	4		—	—	—		
AVG.			69.7601	81.1477	.9828		
Δ WT.			0.1984	11.5857	.2258		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 12,009.9 mgm REMARKS: _____

8830-5, rev.

PARTICULATE LAB WORKSHEET

TEST NO. 21 mech 001 (Inlet, Outlet) LOCATION Test Site B

Date 2/20/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			68	57	32		
DATE WT.			2/21/78	2/19/78	2/20/78		
TARE WT.	1		63.5484	69.0091	.7574		
	2		63.5487	69.0087	.7573		
	3		63.5487	69.0084	.7573		
	4		—	—	—		
AVG.			63.5486	69.0087	.7573		
POST TEST WTS.							
	1		63.8130	69.4929	1.0378		
	2		63.8132	69.4927	1.0282		
	3		63.8133	69.4932	—		
	4		—	—	—		
AVG.			63.8132	69.4929	1.0380		
Δ WT.			.2646	.4842	.2807		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 1,029.5 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 22 BLR OUT (Inlet, Outlet) LOCATION Test Site B

Date 2/20/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			70	59	33		
DATE WT.			2/21/78	2/19/78	2/20/78		
TARE WT.	1		64.5784	63.5537	.7473		
	2		64.5785	63.5534	.7468		
	3		64.5790	63.5530	.7468		
	4		—	—	—		
AVG.			64.5786	63.5534	.7470		
POST TEST WTS.							
	1		64.8691	77.7694	1.0487		
	2		64.8692	77.7696	1.0487		
	3		64.8692	77.7699	—		
	4		—	—	—		
AVG.			64.8692	77.7696	1.0487		
Δ WT.			0.2906	14.2162	0.3017		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 14,808.5 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

PARTICULATE LAB WORKSHEET

TEST NO. 22 Main Out (Inlet, Outlet) LOCATION Test Site B

Date 2/20/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			72	58	34		
DATE WT.			2/21/78	2/19/78	2/20/78		
TARE WT.	1		68.4640	50.4386	.7444		
	2		68.4634	50.4285	.7442		
	3		68.4648	50.4281	.7441		
	4		—	—	—		
AVG.			68.4641	50.4384	.7442		
POST TEST WTS.							
	1		68.9287	50.8626	1.1768		
	2		68.9282	50.8636	1.1770		
	3		68.9280	50.8640	—		
	4		—	—	—		
AVG.			68.9283	50.8637	1.1769		
Δ WT.			0.4642	.4253	.4327		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 1,322.2 mgm REMARKS: _____

5830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 23-BURO JT (Inlet, Outlet) LOCATION Test Site B

Date 2/23/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			63	71	35		
DATE WT.			2/21/78	2/21/78	2/22/78		
TARE WT.	1		49.6388	50.4367	.7524		
	2		49.6392	50.4370	.7523		
	3		49.6390	50.4359	.7521		
	4		—	—	—		
AVG.			49.6390	50.4365	.7523		
POST TEST WTS.							
	1		49.8140	66.9387	.9993		
	2		49.8140	66.9390	—		
	3		49.8141	66.9392	—		
	4		—	—	—		
AVG.			49.8140	66.9390	.9993		
Δ WT.			.1750	16.5025	0.2470		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 16,924.5 mgm REMARKS: _____

5830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 23 Mech Out (Inlet, Outlet) LOCATION Test Site B

Date 2/23/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			74	73	36		
DATE WT.			2/21/78	2/21/78	2/22/78		
TARE WT.	1		69.0080	50.3034	.7500		
	2		69.0086	50.3032	.7499		
	3		69.0078	50.3032	.7495		
	4		—	—	—		
AVG.			69.0081	50.3033	.7498		
POST TEST WTS.							
	1		69.1357	50.8920	1.0810		
	2		69.1352	50.8920	—		
	3		69.1353	50.8922	—		
	4		—	—	—		
AVG.			69.1352	50.8921	1.0810		
Δ WT.			0.1271	0.5888	0.3312		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 1,047.1 mgm REMARKS: _____

SR30-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 24 BLR OUT (Inlet, Outlet) LOCATION Site B

Date 3/2/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			77	75	37		
DATE WT.			3/4/78	3/3/78	3/2/78		
TARE WT.	1		64.4173	49.6417	.7486		
	2		64.4174	49.6417	.7484		
	3		64.4173	49.6417	.7484		
	4		—	—	—		
AVG.			64.4173	49.6417	.7485		
POST TEST WTS.							
	1		64.7095	64.6480	.9736		
	2		64.7096	64.6483	.9740		
	3		64.7097	64.6484	.9737		
	4		—	—	—		
AVG.			64.7096	64.6482	.9738		
Δ WT.			.2923	15.0065	.2253		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 15,524.1 mgm REMARKS: _____

BB30-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 24 Mach out (Inlet, Outlet) LOCATION Site B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			78	76	38		
DATE WT.			3/4/79	3/3/78	3/2/78		
TARE WT.	1		64.0633	68.4648	.7536		
	2		64.0637	68.4649	.7536		
	3		64.0636	68.4650	.7535		
	4		—	—	—		
AVG.			64.0635	68.4649	.7536		
POST TEST WTS.							
	1		64.1931	73.4753	1.1383		
	2		64.1930	73.4752	1.1388		
	3		64.1931	73.4754	1.1383		
	4		—	—	—		
AVG.			64.1931	73.4753	1.1385		
Δ WT.			.1296	5.0104	.3849		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 5524.9 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 25 1360 OUT (Inlet, Outlet) LOCATION Test Site B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			79	81	39		
DATE WT.			3/4/78	3/4/78	3/3/78		
TARE WT.	1		64.1586	64.5829	.7328		
	2		64.1590	64.5832	.7336		
	3		64.1591	64.5829	.7336		
	4		—	—	—		
AVG.			64.1584	64.5830	.7336		
POST TEST WTS.							
	1		64.3805	82.4806	1.0527		
	2		64.3804	82.4812	1.0530		
	3		64.3801	82.4814	1.0535		
	4		—	—	—		
AVG.			64.3803	82.4811	1.0531		
Δ WT.			.2214	17.8981	.3195		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 18,439.0 mgm REMARKS: _____

8F3C-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 25 Mech Out (Inlet, Outlet) LOCATION Site B

Date 3/3/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			80	82	40		
DATE WT.			3/4/78	3/4/78	3/3/78		
TARE WT.	1		63.5518	67.8396	.7522		
	2		63.5519	67.8390	.7522		
	3		63.5519	67.8391	.7521		
	4		—	—	—		
AVG.			63.5519	67.8392	.7522		
POST TEST WTS.							
	1		63.6704	68.2845	1.0976		
	2		63.6698	68.2847	1.0982		
	3		63.6700	68.2843	1.0980		
	4		—	—	—		
AVG.			63.6701	68.2845	1.0979		
Δ WT.			.1182	.4453	.3457		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 C_2 _____ %

Δ Mn 909.2 mgm REMARKS: _____

FED-5 Rev.

PARTICULATE LAB WORKSHEET

TEST NO. 26 Burner (Inlet, Outlet) LOCATION: S. Te B

Date 3/5/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			88	90	41		
DATE WT.			3/4/78	3/4/78	3/5/78		
TARE WT.	1		67.8235	50.4372	.7546		
	2		67.8232	50.4373	.7594		
	3		67.8232	50.4372	.7594		
	4		—	—	—		
AVG.			67.8233	50.4372	.7595		
POST TEST WTS.							
	1		68.2899	65.3211	1.0581		
	2		68.2897	65.3217	1.0584		
	3		68.2895	65.3222	1.0585		
	4		—	—	—		
AVG.			68.2897	65.3217	1.0583		
Δ WT.			.4664	14.8845	.2988		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 15,649.7 mgm REMARKS: _____

BASC-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 26 March out (Inlet, Outlet) LOCATION Site B

Date 3/5/78 Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			89	91	42		
DATE WT.			3/5/78	3/5/78	3/5/78		
TARE WT.	1		68.4657	50.3062	.7396		
	2		68.4650	50.3059	.7398		
	3		68.4650	50.3058	.7399		
	4		—	—	—		
AVG.			68.4650	50.3060	.7398		
POST TEST WTS.							
	1		68.6319	50.7083	1.1151		
	2		68.6320	50.7082	1.1153		
	3		68.6317	50.7086	1.1156		
	4		—	—	—		
AVG.			68.6319	50.7084	1.1153		
Δ WT.			.1669	.4024	.3755		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 944.8 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

BFBC-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 27 BLP OUT (Inlet, Outlet) LOCATION Site B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			98	96	43		
DATE WT.			—	—	—		
TARE WT.	1		67.8217	64.0637	.7500		
	2		67.8222	64.0635	.7500		
	3		67.8225	64.0635	.7501		
	4		—	—	—		
AVG.			67.8221	64.0636	.7500		

POST TEST WTS.

	1		68.0263	79.3185	1.0039		
	2		68.0254	79.3193	1.0042		
	3		68.0257	79.3199	1.0035		
	4		—	—	—		
AVG.			68.0258	79.3192	1.0037		
Δ WT.			.2037	15.2556	.2537		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn 15,713.0 mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 27Mch OUT (Inlet, Outlet) LOCATION Site B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			101	97	44		
DATE WT.			3/19/78	—	—		
TARE WT.	1		69.0066	64.1587	.7633		
	2		69.0070	64.1589	.7631		
	3		69.6072	64.1590	.7630		
	4		—	—	—		
AVG.			69.0070	64.1589	.7631		
POST TEST WTS.							
	1		69.1103	64.4848	1.0410		
	2		69.1092	64.4848	1.0408		
	3		69.1089	64.4848	—		
	4		—	—	—		
AVG.			69.1095	64.4848	1.0409		
Δ WT.			.1025	.3259	.2778		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 706.2 mgm REMARKS: _____

8830-5 rev

PARTICULATE LAB WORKSHEET

TEST NO. 28 BLP OUT (Inlet, Outlet) LOCATION SITE B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			100	99	46		
DATE WT.			3/19/78	3/19/78	—		
TARE WT.	1		64.5812	50.3059	.7540		
	2		64.5815	50.3059	.7542		
	3		64.5815	50.3058	.7543		
	4		—	—	—		
AVG.			64.5814	50.3059	.7542		
POST TEST WTS.							
	1		64.7624	62.6532	.9181		
	2		64.7626	62.6535	.9177		
	3		64.7622	62.6539	.9176		
	4		—	—	—		
AVG.			64.7624	62.6535	.9178		
Δ WT.			.1810	12.3476	.1636		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 12,692.2 mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 28 Mech Off (Inlet, Outlet) LOCATION Site B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.			—	—	—		
BEAKER NO.			103	102	45		
DATE WT.			3/19/78	3/19/77	—		
TARE WT.	1		63.5513	49.6413	.7530		
	2		63.5509	49.6409	.7530		
	3		63.5512	49.6407	.7531		
	4		—	—	—		
AVG.			63.5511	49.6410	.7530		
POST TEST WTS.							
	1		63.6143	49.7908	.9471		
	2		63.6141	49.7910	.9472		
	3		63.6142	49.7906	.9478		
	4		—	—	—		
AVG.			63.6142	49.7908	.9474		
Δ WT.			.0631	.1498	.1994		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn 407.3 mgm REMARKS: _____

8830-5 rev.

SECTION 3.0

GASEOUS DATA

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GASEOUS EMISSION SUMMARY

Location: Site B

Fuel:

TEST NO.	DATE	LOAD %	CONDITIONS	Boiler Outlet O_2 % Dry	Boiler Outlet CO_2 % Dry	Boiler Outlet CO ppm Dry	Boiler Outlet NO ppm Dry	Boiler Outlet NO_2 ppm Wet	Boiler Outlet HC ppm Wet	D.C. Out / Econ. Out O_2 % Dry	D.C. Out / Econ. Out CO_2 % Dry	D.C. Out / Econ. Out CO ppm Dry	D.C. Out / Econ. Out NO ppm Dry	SO_2 ppm Dry	SO_3 ppm Dry	NOTES
1	12/21/77	41	as found	9.9	9.4	OOS	301	OOS	OOS	9.8 /	9.7 /	/	299 /			SO_x
2	12/21/77	28	low load	11.3	8.0	OOS	339			11.8 /	7.6 /	/	373 /			part. blr. out
3	1/5/78	27	low load	10.9	8.2	245	292			10.5 / 11.3	8.9 / 7.6	242 / 279	303 / 214			part. blr out + mech
4	1/6/78	47	as found	8.0	11.4	56	243			7.8 / 9.3	11.9 / 10.4	64 / 85	218 / 231			part. blr out + mech
5	1/8/78	47	as found	6.6	12.1	45	203			/	/	/	/			brink blr out
6	1/11/78	75	norm OFA	5.2	13.7	32	214			4.3 / 4.8	14.0 / 13.3	53 / 56	239 / 250			part blr out + mech, SASS
7	1/12/78	76	reduced OFA	4.4	14.3	139	197			4.5 / 5.8	14.0 / 13.1	151 / 203	190 / 201			part blr out + mech low O_2
8	1/26/78	75	high O_2	10.2	8.9	25	306			9.4 / 7.3	9.8 / 11.6	30 / 35	218 / 240			part blr. out + mech.
9	1/26/78	73	norm O_2	6.9	12.1	120	237			6.0 /	13.0 /	120 /	150 /			part. blr. out + mech.
10a	1/27/78	31	as found	11.3	8.4	295	351			13.0 /	6.2 /	394 /	428 /			gaseous
b			reduced O_2	10.0	9.0	229	311			/	/	/	/			gaseous
c			reduced O_2	8.8	10.1	148	273			12.0 /	7.6 /	340 /	340 /			gaseous
d			increased O_2	14.0	5.8	601	437			15.0 /	4.8 /	480 /	630 /			gaseous
11	1/28/78	48	norm OFA	8.8	10.8	96	339			9.4 / 10.5	11.0 / 9.1	124 / 129	380 / 369			part blr out + mech
12	1/28/78	49	reduced OFA	8.0	11.8	36	280			8.9 /	10.7 /	45 /	283 /			part blr out + mech

NOTE: All parts per million (ppm) figures are corrected to a 3% O_2 constant dilution factor

#15900

GASEOUS EMISSION SUMMARY

Location: Site B

Fuel:

TEST NO.	DATE	LOAD %	CONDITIONS	Boiler Outlet O_2 % Dry	Boiler Outlet CO_2 % Dry	Boiler Outlet CO ppm Dry	Boiler Outlet NO ppm Dry	Boiler Outlet NO_2 ppm Wet	Boiler Outlet HC ppm Wet	D.C. Out / Econ. Out O_2 % Dry	D.C. Out / Econ. Out CO_2 % Dry	D.C. Out / Econ. Out CO ppm Dry	D.C. Out / Econ. Out NO ppm Dry	SO_2 ppm Dry	SO_3 ppm Dry	NOTES
13 a	2/3/78	72	as found	7.5	11.6	53	267			7.5 /	11.6 /	67 /	233 /			gaseous
b			reduced O_2	5.9	13.0	36	226			7.0 /	12.0 /	36 /	226 /			" "
c			reduced O_2	4.7	13.9	28	194			5.8 /	13.0 /	36 /	180 /			" "
14 a	2/4/78	96	as found	5.8	13.3	24	261			7.4 /	12.0 /	40 /	265 /			gaseous
b			reduced O_2	4.6	14.5	22	258			6.4 /	12.8 /	113 /	259 /			" "
c			reduced O_2	3.4	15.4	125	225			5.7 /	13.3 /	108 /	241 /			" "
d			increased O_2	6.4	12.8	34	296			8.0 /	11.1 /	42 /	318 /			" "
15	2/6/78	87	low O_2	4.3	14.7	27	215			3.9 / 6.0	15.1 / 13.2	31 / 36	211 / 216	149 /	0 /	SASS, Part, SO_x blr out, ESP out
16	2/7/78	89	norm O_2	7.0	12.1	48	294			6.5 / 8.2	12.5 / 11.7	59 / 65	332 / 343	274	0	" "
17	2/9/78	88	norm O_2	6.6	12.4	47	320			5.6 / 7.1	13.2 / 11.9	47 / 49	292 / 337			Flyash Reinjection part. blr out mech.
18	2/17/78	74	pulling bottom ash	6.5	12.9	163	287			/	/	/	/			
19	2/18/78	75	low O_2	4.7	14.4	35	239			/	/	/	/			
20	2/18/78	73	norm O_2	6.8	12.4	35	332			/	/	/	/			
21	2/20/78	73	norm OFA	6.8	12.4	34	310			/	/	/	/			max. O.F.A. blr. out & mech
22	2/20/78	72	reduced OFA	6.3	12.9	103	219			/	/	/	/			min O.F.A. blr. out & mech.
23	2/22/78	99	reduced reinj	5.5	13.6	41	254			/	/	/	/			no flyash reinj. part & blr out mech

NOTE: All parts per million (ppm) figures are corrected to a 3% O_2 constant dilution factor

#15900

GASEOUS EMISSION SUMMARY

Location: Site B

Fuel:

TEST NO.	DATE	LOAD %	CONDITIONS	Boiler Outlet O_2 % Dry	Boiler Outlet CO_2 % Dry	Boiler Outlet CO ppm Dry	Boiler Outlet NO ppm Dry	Boiler Outlet NO_2 ppm Wet	Boiler Outlet HC ppm Wet	D.C Out / Econ. Out O_2 % Dry	D.C Out / Econ. Out CO_2 % Dry	D.C Out / Econ. Out CO ppm Dry	D.C Out / Econ. Out NO ppm Dry	SO_2 ppm Dry	SO_3 ppm Dry	NOTES
24	3/2/78	99	max load	5.1	13.9	72	256									part. blr out + mech. out, sizing
25	3/3/78	100	max load	5.3	13.7	60	317									and ash balance
26	3/5/78	99	max load	5.3	13.7	83	287									part. blr + mech. out
27	3/9/78	79	norm OFA	6.4	12.6	44	311									part. blr + mech out
28	3/9/78	81	norm OFA	6.5	12.7	47	305									" "
29	3/16/78	79	as found	6.6	12.5	40	259									" "
30	3/17/78	78	as found	6.0	13.0	46	232									SASS - blr out SO_x - blr + econ
31	3/18/78	77	as found	6.0	13.0	27	259									" "
32	3/20/78	78	as found	5.9	13.1	31	235									SO_x blr out
33	3/21/78	79	as found	6.1	12.9	47	241									SASS - blr out SO_x - blr out, econ
26c	3/5/78		max load	4.4	14.7	62	252									sizing blr. + mech. out

NOTE: All parts per million (ppm) figures are corrected to a 3% O_2 constant dilution factor

#15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 1

DATE 12-21-77

FUEL Kentuckey Cumberland

LOAD 411.1

CONDITIONS baseline

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
1-6	8:56	11.0	8.6	—		165	278.3									
1-6	9:10	10.1	9.1	—		185	306.6									
ECON.	9:28	10.9	8.6	—		170	304.3									
ECON.	9:48	10.9	8.6	—		170	304.3									
#1	10:07	8.9	10.3	—		190	320.8									
#2	10:29	9.4	9.6	—		200	311									
#4	10:58	9.0	10.3	—		190	285.7									
#5	11:18	9.0	10.2	—		190	285.7									
#6	11:48	9.0	10.1	—		190	285									
ECON	11:57	9.0	10.4	—		190	285.7									
1-6	12:25	11.5	8.0	—		155	295									
1-6	12:45	10.8	8.6	—		180	319									
ECON	13:05	8.4	11.0			210	300.7									

AVERAGES

Boiler		9.9	9.6		—		301									
Multi. Econ.		9.8	9.7		—		299									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

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KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 2

DATE 12-21-77

FUEL Kentucky Cumberland

LOAD 27.7

CONDITIONS baseline

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
#4	16:36	11.0	8.2	-		190	3435									
#5	16:45	11.3	7.9	-		185	3446									
#6	17:00	11.2	8.0	-		185	340.4									
#2		11.0	8.2	-		195	3525									
#1-4		10.3	8.9	-		195	331									
#3-4	15:16	11.3	8.2	-		161	298									
#1-6	15:54	12.5	7.0	-		140	298									
Econ	16:10	11.8	7.6	-		190	373									
#1	16:20	11.3	8.0	-		190	354									
#3	16:27	11.5	7.7	-		170	334									
#1-6	17:47	11.1	8.2	-		185	337									

AVERAGES

Boiler out	1	11.3	8.0				333									
Mix'r																
Econ out		11.8	7.6				373									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 3

DATE 1-5-78

FUEL Hatfield

LOAD 47.3

CONDITIONS baseline

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO - ppm(dry) unc	CO - ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
#2	10:35	11.5	7.8	130	247	180	343							1200	2284	
#2-6	10:48	11.8	7.5	125	246	180	354							1200	2356	
#3	11:13	10.2	8.3	100	168	193	323							1100	1843	
#4	11:35	10.0	8.6	105	172	170	279							650	1221	
#5	11:50	10.6	8.4	120	208	170	294							850	1472	
#6	12:20	11.0	8.4	140	253	150	271							750	1356	
#1	12:40	11.0	8.4	160	284	120	217							200	362	
ECON	13:00	11.3	7.6	150	279	115	214							780	1453	
#1-3	13:30	10.8	8.6	160	284	170	301							820	1542	
Multi-Clone	14:00	10.5	8.9	140	242	175	303							1100	1905	
#1-6	14:35	11.5	7.9	190	362	135	257							280	532	

AVERAGES

Boiler out		10.9	8.2		245		292								1491	
mult.		10.5	8.9		242		303								1905	
Econ out		11.3	7.6		279		214								1453	

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 4

DATE 1-6-78

FUEL Kentucky Cumberland

LOAD 47.3

CONDITIONS baseline

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
pre test #1-6	9:45	10.5	9.8	150	257	135	231							360	514	
pre test #1-6	10:00	10.8	8.8	150	265	135	238							1530	2700	
#1	10:30	8.0	11.4	45	62	180	249							1350	1864	
#2	10:43	7.8	11.4	45	61	185	252							1980	1982	
#3	10:56	8.0	11.2	45	62	170	235							1370	1897	
#5	11:15	8.3	11.0	35	50	180	255							1150	1630	
#6	11:38	8.4	10.8	40	57	175	250							1270	1814	
#4	11:55	7.8	11.4	35	48	175	239							820	1118	
Econ	12:05	9.3	10.4	55	85	150	231							1360	2202	
#1-6	12:20	7.5	12.1	40	53	165	220							840	1093	
multi-clone out	12:55	7.8	11.9	47	64	160	218							1250	1705	

AVERAGES

Boiler out		8.0	11.4		56		243							1615	
multi		7.8	11.8		64		218							1705	
Econ out		9.3	10.4		85		231							2202	

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 5A-5B

DATE 1-8-78

FUEL Hatfield

LOAD 46.7

CONDITIONS low O_2

DATA TAKEN BY J.E.R.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
Test A																
#1	9:50	7.11	11.6	40	52	210	272									
#2	10:00	7.3	11.6	30	39	205	272									
#3	10:07	7.0	11.8	50	66	218	286									
#4	10:16	7.6	11.6	40	52	205	264									
#5	10:25	7.3	11.2	45	69	160	227									
#6	10:35	7.5	11.0	30	40	165	220									
comp	10:45	7.6	11.0	30	40	160	215									
Test B																
comp B	2:00	6.0	12.2	30	36	172	206									
B	2:15	6.25	12.1	28	34	160	195									start of Brick
B	2:30	6.35	12.2	30	37	170	209									
comp B	3:00	6.8	11.8	30	58	175	222									
—	3:35	6.6	12.0	42	53	160	200									
—	3:30	7.5	11.2	55	73	140	187									
AVERAGES																
Boiler A		7.5	11.4		50		253									
Boiler B		6.6	12.1		45		203									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA - Site B

TEST NO 6

DATE 1-11-78

FUEL South East

LOAD 75.5

CONDITIONS Max O.E.A.

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
Pre Test #1-6	10:30	6.7	12.6	35	44	217	279									
#2-6	11:00	5.0	14.2	25	28	180	203									
#1,3-6	11:15	5.5	13.8	30	35	170	197									
#1	11:35	5.5	13.6	30	35	170	197									
#6	12:00	6.3	13.0	30	37	170	208									
#2,4-6	12:15	6.5	12.4	30	37	165	205									
#1-3,5,6	12:50	4.2	14.1	50	54	215	230									
multi Clone	13:00	4.0	14.2	55	58	215	229									
multi Clone	13:05	4.5	13.7	55	60	210	229									
ECon	13:15	4.8	13.3	50	56	215	250									
#1-6	13:27	4.5	13.6	33	36	200	218									
#1-6	14:40	5.0	13.9	25	28	200	225									
#1-6	15:10	4.9	14.2	29	32	207	231									

AVERAGES

Boiler out		5.2	13.7		32		211									
multiclone		4.3	14.0		56		234									
ECon out		4.4	13.7		56		250									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 7

DATE 1-12-78

FUEL South East

LOAD 75.8

CONDITIONS min O.F.A.

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
#1-5 Comp	10:40	3.6	15.1	125	129	175	181									
Comp Boiler out	11:00	3.6	15.1	140	145	180	186									
ECON	11:10	5.4	13.3	185	213	170	196									
Comp Boiler out	11:25	4.3	14.5	165	173	170	183									
Comp Boiler out	11:35	6.0	12.8	420	504	160	192									
Comp Boiler out	12:07	4.1	14.5	105	112	170	181									
Comp Boiler out	12:14	4.6	14.3	40	44	180	148									
Multi Clone out	12:27	4.8	14.0	185	206	150	167									
Comp Boiler out	12:35	4.5	14.2	75	82	190	207									
Comp Boiler out	12:48	4.6	14.1	70	33	200	220									
Comp Boiler out	13:00	4.7	14.0	23	25	200	221									
Multi Clone	13:05	4.0	14.5	75	79	220	233									
Multi Clone	13:15	4.8	13.6	160	169	160	169									
Econ	13:30	6.1	12.8	160	193	170	205									

AVERAGES

Boiler out		4.4	14.3		139		197									
Multi Clone Econ out		4.5 / 5.8	14.0 / 12.1		151 / 203		190 / 201									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABM A-Site B

TEST NO 8

DATE 1-26-78

FUEL Kentucky Cumberland

LOAD 74.5

CONDITIONS High O_2

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
#1-5	10:40	8.25	10.6	25	25	225	318									
#1-5	11:08	10.5	8.9	30	52	108	310									
#1-5	11:25	10.0	9.2	20	33	200	328									
#1-5	11:45	10.5	8.9	20	34	190	327									
Econ	11:50	9.4	9.8	30	47	218	339									
Multi Clone	11:55	7.25	11.6	35	46	240	315									
#1-5	12:35	10.8	8.2	15	27	160	284									
#1-5	12:45	10.8	8.2	17	30	160	284									

AVERAGES

Boiler out		10.2	8.4		25		182									
Multi Clone / Econ out		9.4 / 7.3	9.0 / 11.6		30 / 35		218 / 240									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 9

DATE 1-26-78

FUEL Kentucky Cumberland

LOAD 72.5

CONDITIONS

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
Pre Test #1-5	16:27	3.0	16.0	360	360	200	200									
#1-5	16:34	7.0	12.1	20	26	210	270									
#1-5	16:4[illegible]	7.2	12.0	20	26	200	261									
#1-5	17:12	2.05	11.8	40	52	120	158									
#1-5	17:20	5.0	13.9	180	203	170	191									
Econ	17:30	6.0	13.0	120	144	150	150									
#1-5	17:40	7.0	12.4	80	103	180	232									
#1-5	17:50	8.0	16.6	15	21	210	294									
#1-5	18:00	7.2	12.2	300	392	200	261									

AVERAGES

Boiler		6.9	12.1		120		237									
Econ		6.0	13.0		120		150									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-SITE B

TEST NO 10

DATE 1-27-78

FUEL SouthEast

LOAD 313

CONDITIONS Vary O_2

DATA TAKEN BY

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
#1-6	10:21	11.25	8.4	160	295	190	257									
Econ	10:30	13.0	6.2	175	304	190	428									
#1-6	10:40	10.0	9.0	140	224	190	311									
#1-6	10:45	8.8	10.1	100	148	185	277									
Econ	11:20	16.0	2.6	170	340	170	340									
#1-6	11:40	14.0	5.8	235	601	170	437									
Econ	12:00	15.0	4.8	160	480	210	630									
AVERAGES																

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 11

DATE 1-28-78

FUEL Reload

LOAD 47.6

CONDITIONS Max O.F.A.

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
#2-6	9:51	8.25	11.2	45	64	210	296									
#2-6	10:25	8.25	11.0	60	88	215	316									
#2-6	10:35	8.5	11.0	50	72	210	302									
#2-6	11:00	9.25	10.4	50	77	225	345									
ECON	11:18	10.5	9.1	75	129	215	369									
#2-6	11:32	9.25	10.1	55	84	245	375									
#2-6	11:43	8.25	11.1	40	56	260	367									
#2-6	12:08	9.4	11.0	70	110	237	371									
mult Clon	12:20	9.4	11.0	80	124	245	380									

AVERAGES

Blout		8.84	10.83		96.4		339									
Econ		10.5	9.1		129		369									
mult Clon		9.4	11.0		124		380									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 12

DATE 1-28-78

FUEL Reload

LOAD 48.7

CONDITIONS Min OFA

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
#2-6	15:07	8.25	11.4	20	28	210	295									
#2-6	15:26	8.25	11.4	25	35	210	296									
#2-6	15:45	8.0	11.8	25	35	210	291									
ECON	16:02	8.9	10.7	30	45	190	283									
#2-6	16:22	8.5	11.3	30	43	190	274									
#2-6	16:42	8.0	12.0	25	35	140	263									
#2-6	17:00	7.1	12.6	30	39	200	259									

AVERAGES

Boiler		8.0	11.8		36		280									
ECON		8.9	10.9		45		283									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 13

DATE 2-3-78

FUEL Blend

LOAD 71.6

CONDITIONS Vary O_2

DATA TAKEN BY JEC

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
#1-6	2:50	7.5	11.6	40	35	200	267									
ECON	3:00	7.5	11.6	50	67	175	233									
#1-6	3:10	5.9	13.0	32	36	190	226									
ECON	3:20	7.0	12.0	30	39	170	219									
Boiler	3:30	4.7	13.9	25	28	180	199									
Econ	3:50	5.8	13.0	35	36	160	180									

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 14

DATE 2-4-78

FUEL Reload

LOAD 95.7

CONDITIONS Vary O_2

DATA TAKEN BY JEC

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
#1-6	12:25	5.8	13.3	20	24	220	261									
ECON	12:35	7.4	12.0	30	40	200	265									
#1-6		4.6	14.5	20	22	235	258									
ECON	12:45	6.4	12.8	92	113	210	259									
#1-6	12:55	7.4	15.4	122	125	220	225									
ECON	1:00	5.7	13.3	92	108	205	241									
#1-6	1:05	6.4	12.8	30	34	240	296									
ECON	1:15	8.0	16.1	30	42	230	318									

AVERAGES

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 15

DATE 2-6-78

FUEL Reload

LOAD 87.4

CONDITIONS normal

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
PreTest #2,3,5,6	14:30	6.4	12.4	180	222	160	197									
#2,3,5,6	15:10	6.7	12.2	110	138	150	189									
#2,3,5,6	15:30	6.7	12.1	140	176	140	176									
#1,5,6	16:15	2.17	16.8	30	28	170	161									16:00 O_2 dropped
#1,4-6	16:40	4.2	15.1	25	27	175	187									
ECON	16:55	6.3	12.8	25	31	160	196									
Multi-Clone	17:05	3.9	15.0	32	34	190	200									
#1,5+6	17:19	4.0	14.9	25	26	140	148									
#1,4,6	17:35	4.2	18.8	20	21	150	161									
#1,4,6	17:49	3.7	15.3	20	21	215	224									
#1,4,6	18:01	4.0	15.1	20	21	228	238									
#1,4,5	18:15	3.9	15.1	20	21	210	221									
ECON	18:40	5.7	13.6	35	41	200	235									
#1,4,5	18:55	3.8	15.4	27	28	220	230									
#1	19:15	4.3	14.7	32	34	240	254									
#2	19:20	4.3	14.8	35	38	290	291									
#3	19:25	4.3	14.8	20	22	250	269									
#5	19:31	4.2	15.0	20	21	250	268									

AVERAGES

Boiler out		4.3	14.7		27		215									
Multi Clone out		3.9	15.1		31		211									
Econ out		6.0	13.7		36		216									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 16

DATE 2-7-78

FUEL Reload

LOAD 88.7

CONDITIONS normal

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO - ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
Pre Test #1	12:15	5.55	13.2	40	47	260	303									
#2	12:22	5.9	12.9	40	48	250	298									
#3	12:28	6.7	12.2	30	38	250	315									
#4	12:33	6.9	12.0	35	45	250	314									
#5	12:38	7.0	11.7	35	45	240	309									
#6	12:43	7.0	11.6	35	45	245	315									
#1-6	13:00	7.0	12.0	35	45	230	295									
#2-6	13:15	7.0	12.0	30	39	240	309									
#2-6	13:24	6.6	12.3	35	44	235	291									
#2-6	13:45	6.6	12.3	35	44	220	282									
#2-6	14:00	6.7	12.0	38	48	225	283									
#2-6	14:30	7.9	11.2	45	62	220	302									
#2-6	15:00	7.0	12.1	37	48	240	309									
mult-out	15:20	6.5	12.5	48	60	265	329									
#1,3-6	15:37	6.4	12.8	35	43	240	296									
#1,3-6	15:56	6.5	12.5	35	43	250	310									
#2,4-6	16:26	6.8	12.4	40	51	265	336									
ECON	16:40	8.5	11.9	45	65	240	346									
#1,4,6	17:08	7.1	12.0	42	54	250	324									
#1,4,6	17:21	7.0	12.1	37	48	240	309									
mult-out	17:34	6.5	12.4	47	58	270	335									
#1,4,5	17:40	7.2	12.0	40	52	245	320									
#1,3-6	18:10	6.9	12.1	45	57	245	313									
ECON	18:20	7.8	11.4	48	65	250	341									
#1,3-6	18:46	7.4	12.0	35	46	260	344									
#1,3-6	19:02	7.2	12.2	33	42	255	323									
Comp	19:10	7.2	12.1	35	46	240	313									

AVERAGES

Boiler out		7.0	12.1		48		241								
mult. out		6.5	12.5		59		372								
Econ out		8.2	11.7		65		343								

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 17

DATE 2-9-78

FUEL Reload

LOAD 88.3

CONDITIONS

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO - ppm(dry) unc	CO - ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
Pre Test Comp	10:10	6.5	12.5	50	62	240	298									
#1-5	10:42	6.7	12.2	37	47	240	302									
#1-5	11:06	6.6	12.4	37	46	250	313									
#1-4	11:57	6.9	12.4	42	54	260	332									
#1-4	12:10	6.3	12.8	40	49	260	318									
#1-5	12:20	6.8	12.3	30	38	260	330									
#1-5	12:30	6.2	12.4	37	45	260	316									
#1-5	12:40	6.5	12.1	30	37	255	317									
multi	12:45	5.6	13.2	40	47	250	292									
ECON	12:50	7.1	11.9	38	49	260	337									
#1-5	13:10	6.7	12.1	35	44	265	334									

AVERAGES

Boiler		6.6	12.4		47		320									
multiCube		5.6	13.2		47		292									
ECON		7.1	11.9		49		337									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 18

DATE 2-17-78

FUEL SouthEast

LOAD 73.7

CONDITIONS Max O.F.A.

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
#2-6	11:15	6.0	13.3	40	48	225	270									
#2-6	11:31	6.0	13.3	40	48	225	270									
#2-6	11:40	5.8	13.5	50	59	225	266									
#2-6	11:55	7.5	11.9	60	80	210	281									
#2-6	12:07	7.6	11.5	100	135	220	296									
#2-6	12:17	6.0	13.2	110	132	260	312									
#2-6	12:27	5.8	13.5	145	172	255	302									
#2-6	12:35	6.0	13.3	160	192	260	312									
#2-6	12:44	6.1	13.3	160	194	255	308									
#2-6	13:00	5.8	13.6	170	202	250	296									
#2-6	13:14	6.7	12.6	180	227	240	303									
#2-6	13:26	7.3	12.1	185	243	220	290									
#2-6	13:35	6.7	12.6	190	240	215	271									
#2-6	13:40	6.9	12.5	195	249	210	269									
#2-6	13:55	6.9	12.8	185	237	205	262									

AVERAGES

Boiler		6.5	12.9		163		297									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 19

DATE 2-18-78

FUEL Kentucky Cumberland

LOAD 75.19

CONDITIONS

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO - ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
#1-5	9:39	4.3	15.0	30	32	230	248									
#1-5	9:46	4.9	14.5	38	40	246	275									
#1-5	9:56	4.9	14.3	38	40	245	274									
#1-4	10:09	4.5	14.6	32	35	240	262									
#1-4	10:20	4.3	14.8	36	39	240	259									
#1-5	10:30	5.2	13.9	22	25	200	228									
#1-5	10:44	5.0	14.1	28	32	210	236									
#1	10:55	4.3	14.5	28	30	180	194									
#1-5	11:01	5.1	13.9	39	44	200	227									
#1-5	11:10	4.7	14.5	41	45	190	210									
#1-5	11:20	5.1	14.2	25	28	200	227									
#1-5	11:30	4.1	14.8	38	40	205	218									
#1-5	11:49	5.0	13.9	25	28	225	253									

AVERAGES

Boiler		4.7	14.4		35		239									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 20

DATE 2-18-78

FUEL Kentucky-Cumberland

LOAD 72.8

CONDITIONS

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
PreTest #1-5	14:00	5.2	14.2	10	11	240	274									
#1-5	14:07	5.7	13.6	25	29	250	294									
#1-5	14:15	7.4	12.0	29	37	262	338									
#1-5	14:25	7.1	12.2	29	37	262	338									
#1-5	14:35	7.4	12.0	29	38	280	371									
#1-5	2:50	7.1	12.0	29	38	270	350									
#1-5	15:07	6.6	12.5	29	36	290	363									
#1-5	15:26	6.6	12.8	25	31	250	313									
#1-5	15:40	7.4	11.9	25	33	235	312									
#1-5	15:50	6.4	12.8	28	34	250	302									
#1-5	16:04	6.7	12.5	28	35	260	328									

AVERAGES

Boiler		6.8	12.4		35		332									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 21

DATE 2-20-78

FUEL Hatfield

LOAD 72.8

CONDITIONS Max O.F.A.

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
#1-5	10:10	7.0	12.4	22	28	245	316									
#1-5	10:20	6.5	12.8	25	31	240	298									
#1-5	10:30	6.8	12.4	26	32	225	286									
#1-5	10:40	6.8	12.4	25	32	225	286									
#1-5	10:50	6.6	12.8	27	34	240	300									
#1-5	11:00	7.6	11.6	30	40	235	316									
#1-5	11:10	7.0	12.0	30	39	230	296									
#1-5	11:20	6.8	12.4	30	38	280	317									
#1-5	11:40	6.7	12.4	22	28	260	328									
#1-5	11:50	6.7	12.4	25	32	260	328									
#1-5	12:00	6.7	12.4	27	34	260	328									
#1-5	12:15	7.0	12.2	25	35	260	335									

AVERAGES

Boiler		6.8	12.4		34		310									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 22

DATE 2-20-78

FUEL Hatfield

LOAD 71.8

CONDITIONS Min OFA

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO - ppm(dry) unc	CO - ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
#2-6	14:37	6.5	12.8	40	50	170	211									
#2-6	14:49	6.3	12.9	50	61	185	227									
#2-6	15:00	6.7	12.1	65	59	185	233									
#2-6	15:10	7.0	12.4	55	70.9	185	148									
#2-6	15:30	6.6	12.5	95	119	175	219									
#2-6	15:37	6.0	13.2	85	102	200	240									
#2-6	15:45	5.9	13.3	89	102	200	225									
#2-6	15:55	6.2	12.5	93	113	160	195									
#2-6	16:10	6.4	13.0	107	132	165	204									
#2-6	16:20	5.0	14.0	160	180	165	186									

AVERAGES

Boiler		6.3	12.9		103		209									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 23

DATE 2-22-78

FUEL Kentucky Cumberland

LOAD 98.9

CONDITIONS No Fly Ash Reinjection

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
#1-5	11:20	5.6	13.7	30	35	225	269									
#1-5	11:30	4.9	14.2	20	22	230	257									
#1-5	11:37	4.8	14.3	40	44	220	245									
#1-5	11:48	5.0	14.1	18	20	220	248									
#1-5	12:01	5.6	13.2	30	35	220	257									
#1-5	12:18	5.4	13.6	25	29	235	271									
#1-5	12:30	5.7	13.5	32	38	235	279									
#1-5	12:40	5.6	13.4	40	47	225	263									
#1-5	12:56	6.2	12.8	50	61	195	237									
#1-5	13:05	6.3	12.8	45	55	195	239									
#1-5	13:15	5.1	13.8	55	62	205	232									

AVERAGES

Boiler		5.5	13.6		41		254									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE ABMA-Site B

TEST NO 24

DATE 3-2-78

FUEL Southeast

LOAD 98.8

CONDITIONS As Found

DATA TAKEN BY J.O.B.

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO - ppm(dry) unc	CO - ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
#1,2,4,5,6	11:35	5.3	13.8	40	46	260	298									
#1,2,4,5,6	11:45	5.1	13.9	50	57	235	266									
#1,2,4,5,6	11:55	5.5	13.3	55	64	185	215									
#1,2,4,5,6	12:10	5.1	14.1	57	65	235	266									
#1,2,4,5,6	12:25	5.1	14.0	60	68	225	255									
#1,2,4,5,6	12:40	5.0	14.2	62	70	250	281									
#1,2,4,5,6	12:55	5.0	14.2	62	70	245	276									
#1,2,4,5,6	13:15	5.2	13.9	62	71	235	268									
#2-6	14:44	5.2	13.9	75	86	270	308									
#2-6	14:59	5.3	13.8	72	83	250	287									
#2-6	15:15	5.3	13.9	70	80	250	287									
#2-6	15:45	5.0	14.0	67	75	225	253									
#2-6	16:00	5.3	13.6	70	80	245	281									
#2-6	16:15	4.8	14.2	70	78	250	278									
#2-6	16:30	5.0	13.9	70	79	230	254									
#2-6	16:35	5.1	13.9	70	79	225	255									

AVERAGES

Boiler		5.7	13.4		72		256									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE B

TEST NO 25

DATE 3/3/78

FUEL Kentucky - (Cumberland)

LOAD 100.2%

CONDITIONS As found

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	10:30	6.0	13.3	45	54	160	192									
2-6	10:45	5.9	13.1	50	60	250	298									
6	10:55	4.7	14.2	40	44	310	343									
5	11:00	6.2	12.8	42	57	280	341									
4	11:06	4.3	14.5	45	49	320	345									
3	11:10	4.8	14.1	45	50	310	343									
2	11:15	4.9	13.9	52	58	310	347									
2-6	11:30	5.2	13.8	50	57	290	331									
2-6	11:45	5.3	12.7	52	60	280	321									
2-6	12:00	5.6	13.7	55	64	285	333									
2-6	12:15	5.7	13.6	55	65	270	318									
2-6	12:30	5.2	13.9	57	65	270	308									
1,2,3,5,6	15:00	5.9	13.3	55	65	285	340									
1,2,3,5,6	15:15	5.5	13.5	53	62	280	330									
1,2,3,5,6	15:30	5.2	13.9	47	54	270	308									
1,2,3,5,6	15:45	5.7	13.6	70	82	260	306									
1,2,3,5,6	15:57	4.7	14.5	68	75	265	293									

AVERAGES

RLP out		5.3	13.7		59.7		311									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE B

TEST NO 26

DATE 3/5/78

FUEL Hat field

LOAD 99.0

CONDITIONS as found

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	10:53	7.0	12.1	67	86	250	361									
2-6	11:08	6.3	12.8	65	80	220	331									about 11:55
2-6	11:38	5.6	13.6	68	80	250	292									O_2 dropped to
2-6	11:53	4.4	14.5	73	79	240	260									1.2% due to
2-6	12:08	5.5	13.6	73	85	240	279									a stuck valve,
2-6	12:23	5.0	14.0	75	84	230	259									when operator
2-6	12:38	4.7	14.2	77	15	240	265									Tried to lower
2-6	12:53	4.9	14.1	77	86	250	280									O_2 nothing happened
2-6	13:08	4.4	14.5	72	78	240	260									because it was
1,2,3,5,6	15:30	4.6	14.5	62	68	220	242									stuck, Testing
1-3,4,5	15:45	4.4	14.7	60	65	230	250									was stopped for
1-3,4,5	16:00	4.4	14.7	58	63	240	260									about 20 minutes
1-3,4,5	16:15	4.4	14.8	50	54	237	257									until O_2 stabilized
1-3,4,5	16:30	4.3	14.9	52	56	235	258									at about 5%

AVERAGES

BLR OUT		5.3	13.7		53		287									Part Test
BLR OUT		4.4	14.7		62		252									Sizing Test

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE 3

TEST NO 27

DATE 3/9/78

FUEL Kentucky (Cumberland)

LOAD 79.4

CONDITIONS Min O.F.A. - normal

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
2-6	10:00	6.0	13.0	35	42	280	336									
2-6	10:15	6.5	12.5	33	41	240	298									
2-6	10:25	6.6	12.5	35	44	250	313									
2-6	10:35	6.6	12.5	35	44	260	325									
2-6	10:50	6.5	12.5	37	46	247	307									
2-6	11:05	6.4	12.5	37	46	250	313									
2-6	11:18	6.1	12.8	37	45	250	302									
2-6	11:33	6.3	12.7	37	45	245	300									
2-6	11:50	6.2	12.8	37	45	245	298									
2-6	12:00	6.3	12.6	37	45	255	313									

AVERAGES

BW2OST		6.4	12.6		44		310									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE B

TEST NO 28

DATE 3/9/78

FUEL Kentucky (Cumberland)

LOAD 50.9%

CONDITIONS 4.4 OFA

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry)		NO ppm(dry)		HOT LINE SAMPLES, PPM (WET)								REMARKS
								NOx		NO		NO_2		HC		
				unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	unc	cor	
2-6	14:45	6.9	12.4	38	49	240	307									
2-6	15:00	6.8	12.3	35	44	260	330									
2-6	15:15	6.4	12.8	37	46	240	296									
2-6	15:30	6.3	12.9	37	45	240	294									
2-6	15:45	6.4	12.6	37	46	245	302									
2-6	16:00	6.4	12.7	37	46	240	296									
2-6	16:15	6.4	12.7	40	49	245	302									
2-6	16:30	6.3	12.8	40	49	250	307									
2-6	16:40	6.4	12.7	40	49	250	309									

AVERAGES

Ave.		6.5	12.7		47		305									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE B

TEST NO 29

DATE 7/16/78

FUEL Kentucky (unbarked)

LOAD 80%

CONDITIONS

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
1,2,4-6	11:40	7.0	12.3	37	48	207	267									
1,4-6	12:00	7.2	12.0	35	46	210	274									
1,4-6	12:35	6.3	12.8	28	34	200	245									
1,4-6	13:00	6.2	12.8	30	37	200	244									
1,4-6	13:20	6.6	12.4	30	38	205	257									
AVERAGES																
DLR OUT		6.7	12.5		41		257									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE B

TEST NO 30

DATE 3/17/78

FUEL Hatfield Coal

LOAD 78.1 %

CONDITIONS As found

DATA TAKEN BY SOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
								HOT LINE SAMPLES, PPM (WET)								
1,4-6	13:30	6.1	12.9	40	48	194	234									
1,4-6	13:50	6.1	12.9	40	49	188	229									
1,4-6	14:10	6.2	12.8	40	49	193	235									
1,4-6	14:30	6.2	12.8	43	52	193	235									
1,4-6	14:50	6.2	12.8	48	52	195	237									
Econ out	15:30	8.2	10.8	45	67	184	272									
1,4-6	15:50	6.1	12.8	45	54	178	215									
1,4-6	16:10	5.6	13.1	43	50	190	222									Fan stopped
1,4-6	16:30	6.0	13.0	42	52	193	232									Because load
1,4-6	16:50	6.0	13.1	40	48	190	228									rose to 190 MW
1,4-6	17:10	5.6	13.5	37	43	193	226									
1,4-6	17:30	5.8	13.3	37	44	195	231									

AVERAGES

2,4 out		6.02	12.99		46		232									
Econ out		8.2	10.8		67		272									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE B

TEST NO 31

DATE 3/18/78

FUEL Kentucky Cumberland

LOAD 50%

CONDITIONS As found

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
1,4-6	11:45	7.5	11.5	22	29	205	274									
Econ Out	11:50	8.0	11.0	25	35	238	330									
1,4-6	12:05	6.3	12.8	22	27	260	257									
Econ Out	12:10	7.8	11.3	25	34	240	328									
1,4-6	12:25	6.0	13.1	23	30	218	262									
Econ Out	12:35	7.5	11.5	23	1	202	277									
1,4-6	12:45	6.1	13.1	19	22	225	272									
1,4-6	13:05	5.9	13.1	18	21	220	263									
1,4-6	13:25	6.0	13.1	18	22	210	252									
1,4-6	13:45	6.0	13.1	20	24	225	270									
1,4-6	14:05	6.1	13.0	25	30	208	252									
2	14:00	5.6	13.4	35	41	260	304									
2	14:15	5.1	14.0	30	34	231	270									
1,4-6	14:25	6.0	13.2	25	30	203	243									
1,4-6	14:45	5.9	13.3	20	24	205	245									
2	14:50	5.2	13.9	30	34	231	261									
1,4-6	15:05	5.9	13.2	17	20	190	227									
1,4-6	15:25	5.9	13.2	17	20	198	230									
1,4-6	15:45	5.9	13.1	15	18	200	239									
1,4-6	16:05	5.9	13.1	15	18	200	239									
1,4-6	16:30	7.4	11.7	25	33	218	289									

AVERAGES

1,4-6		6.0	13.0		26		254									
Econ Out		7.8	11.3		33		312									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE B

TEST NO 32

DATE 3/20/78

FUEL Hot field

LOAD 80%

CONDITIONS 4s Foam

DATA TAKEN BY JOB

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO - ppm(dry) unc	CO - ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
1,3-6	11:00	6.5	12.5	30	37	173	215									
1,3-6	11:15	6.5	12.5	27	33	190	236									
1,3-6	11:22	6.0	13.1	27	32	205	246									
2	11:30	5.7	13.5	32	38	220	259									
1,3-6	11:41	5.4	13.1	25	30	173	206									
1,3-6	11:50	5.8	13.3	22	26	203	241									
2	11:55	5.5	13.6	25	29	215	250									
1,3-6	12:15	5.7	13.4	22	26	190	224									
1,3-6	12:20	5.8	13.3	22	26	205	241									

AVERAGES

BLR OUT		5.9	13.1		31		235									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

KVB

GASEOUS EMISSIONS DATA

TEST SITE 3 FUEL Southwest Coal

TEST NO 33 LOAD 78.8%

DATE 3/27/78 CONDITIONS As found 6% excess O2

DATA TAKEN BY

Probe Position	Time	O_2 % (dry)	CO_2 % (dry)	CO ppm(dry) unc	CO ppm(dry) cor	NO ppm(dry) unc	NO ppm(dry) cor	HOT LINE SAMPLES, PPM (WET) NOx unc	NOx cor	NO unc	NO cor	NO_2 unc	NO_2 cor	HC unc	HC cor	REMARKS
1, 4-6	12:15	6.0	12.9	35	42	170	204									
1, 4-6	12:32	6.2	12.8	35	43	175	213									
2	12:39	5.1	13.9	37	42	190	215									
1, 4-6	13:00	5.8	13.2	45	53	183	217									
1, 4-6	13:20	5.8	13.0	35	41	185	219									
1, 4-6	13:40	6.1	12.8	37	45	200	242									
1, 4-6	14:00	6.5	12.4	40	50	200	249									
1, 4-6	14:20	6.7	12.4	40	50	210	261									
1, 4-6	14:40	6.2	12.8	40	49	210	256									
1, 4-6	15:00	6.3	12.6	42	51	205	257									
1, 4-6	15:40	6.2	12.7	45	55	205	250									
1, 4-6	16:00	6.1	12.9	45	54	200	242									
1, 4-6	16:20	6.2	12.8	47	57	205	248									
1, 4-6	16:40	6.2	12.8	32	39	210	256									
1, 4-6	17:00	6.1	12.8	35	42	220	266									
1, 4-6	17:20	6.2	12.8	25	43	220	268									

AVERAGES

ALROS		6.1	12.8		47		241									

NOTE: Parts per million (ppm) figures are corrected to 3% O_2

15900

SOx DATA SUMMARY

Test No.	Load	O2 (%)	SO2 (unc ppm)	SO3 (unc ppm)	SOx (unc ppm)	SO2 (corr ppm)	SO3 (corr ppm)	SOx (corr ppm)	Test Description
1 a	82.1	8.4	385.3	0	385.3	551.7	0	551.7	port #3 blr. out.
b	82.1	8.75	377.0	0					port #3 blr. out.
c	82.1	9.1	348.6	0					port #3 blr. out
avg.			370.3	0					avg. blr. out
15 a	174.8	4.15	351.0	0	351.0	374.0	0	374.0	blr. out
b	174.8	4.3	368.0	0	368.0	394.0	0	394.0	blr. out
c	174.8	3.6	385.5	0	385.5	396.6	0	396.6	blr. out
avg.			368.2	0	368.2	388.2	0	388.2	avg. blr. out
15 d	174.8	6.8	115.0	0	115.0	145.9	0	145.9	ESP out
e	174.8	6.8	115.0	0	115.0	146.0	0	146.0	ESP out
f	174.8	6.7	123.4	0	123.4	155.5	0	155.5	ESP out
avg.			117.8	0	117.8	149.1	0	149.1	avg ESP out
16 a	177.4	8.5	173.8	0	173.8	250.8	0	250.8	ESP out
b	177.4	8.3	173.6	0	173.6	246.6	0	246.6	ESP out
c	177.4	8.3	228.7	0	228.7	324.8	0	324.8	ESP out
avg.			192.0	0	192.0	274.1	0	274.1	avg. ESP out
d	177.4	6.8	355.2	0	355.2	450.9	0	450.9	blr. out
e	177.4	6.6	373.1	0	373.1	467.0	0	467.0	blr. out
f	177.4	6.6	388.0	0	388.0	485.6	0	485.6	blr out
avg.			372.1	0	372.1	467.8	0	467.8	avg. blr. out

8830-7

SOx DATA SUMMARY

Test No.	Load	O2 (%)	SO2 (unc ppm)	SO3 (unc ppm)	SOx (unc ppm)	SO2 (corr ppm)	SO3 (corr ppm)	SOx (corr ppm)	Test Description
30A	158 Klbs/hr	6.1	406	70	476	491	85	576	Boiler Outlet
30B		6.1	263	108	371	318	131	449	
30C		6.2	186	136	322	226	166	392	
AVE			285	105	390	345	127	472	Average blr out
30D		8.9	303	57	360	452	85	537	ESP Outlet
30E		8.1	36	28	64	50	39	89	
30F		8.7	301	22	323	442	32	474	
AVE			213	36	249	315	52	367	Average ESP out
31A	154 Klbs/hr	8.1	270	1	271	378	1	379	ESP ~~Boiler~~ Outlet
31B		7.6	309	3	312	432	4	436	
31C		7.5	252	5	257	352	7	359	
AVE			277	3	280	387	4	391	average ESP out
31D		5.6	299	145	444	350	170	520	Boiler Outlet
31E		5.2	357	1	358	407	1	408	
31F		5.2	297	17	314	339	19	358	
AVE			318	54	372	365	63	428	average blr out

SOx DATA SUMMARY

Test No.	Load K#/hr	O2 (%)	SO2 (unc ppm)	SO3 (unc ppm)	SOx (unc ppm)	SO2 (corr ppm)	SO3 (corr ppm)	SOx (corr ppm)	Test Description
32a	156	5.7	333	24	357	392	28	420	Boiler Out
b		5.5	372	19	391	432	22	454	
c		5.4	334	68	402	386	79	465	
avg			346	37	383	403	43	446	avg. blr. out
33	158	5.1	346	4	350	392	5	397	blr. out

8830-7

Local Test Site B

SOx DATA SHEET

Date 12/21/77 Probe Location & Probe Length 3'

Unit # 14 Fuel Reload Load 70K

Test Description:

Test No.	Box No.	Sample Time	Meter Temp. (T)	(P) Press.	Meter Reading	(P) Baro. Press.	Port	Purge Time	O2
1A	2	11:15	77	-0-	0.000	29.21	3	11:32	8.4
		—	82		1.000			12:02	—
1B	3	11:40	85		0.000			12:05	8.4
		—	87		1.000			12:35	—
1C	1	12:07	89		0.000			12:35	9.1
		—	89		1.000			—	9.1

SAMPLED BY RAP

		Test # 1A			Test # 1B			Test # 1C		
		SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality	N	.00995								
Dilution Factor	F	10	1		10	1		10	1	
Spike		4.5								
Blank	B	4.6								
		4.6								
Averages			4.6			4.6			4.6	
Ml. of Titrant	A	9.0	4.6		8.9	4.6		8.0	4.5	
		9.0			8.6			7.9		
		9.0			8.8			8.0		
Averages		9.0			8.7			8.0		
460 + T		539.5			546			549		
Sample Vol.	V	1.030								
P + p		29.21								
A - B		9.0	0		8.7	0		8.0	0	

TITRATED BY RAP

$$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$$

$$SO2 = \frac{(9.0)(.00995)(10)(539.5)24}{(1.030)(29.21)}$$

SO2 = 383.3 SO3 = [ ]

$$SO3 = \frac{(\ )(\ )(\ )(\ )24}{(\ )(\ )}$$

SO2 @ 3% O2 = 550

SO3 @ 3% O2 =

SOx @ 3% O2 = 550

$$SO2 = \frac{(8.7)(.00995)(10)(546)24}{(1.030)(29.21)}$$

SO2 = 377.0

$$SO3 = \frac{(\ )(\ )(\ )(\ )24}{(\ )(\ )}$$

SO3 = [ ]

SO2 @ 3% O2 = 555

SO3 @ 3% O2 =

SOx @ 3% O2 = 555

$$SO2 = \frac{(8.0)(.00995)(10)(549)24}{(1.030)(29.21)}$$

SO2 = 348.6

$$SO3 = \frac{(\ )(\ )(\ )(\ )24}{(\ )(\ )}$$

SO3 = [ ]

SO2 @ 3% O2 = 525.8

SO3 @ 3% O2 =

SOx @ 3% O2 = 525.8

Local Test Site B

SOx DATA SHEET

Date 2-6-78 Probe ~~Length~~ Location Boiler Outlet

Unit # 14 Fuel Reload From dead storage Load

Test No.	Box No.	Sample Time	Meter Temp. (T)	(P) Meter Press.	Meter Reading	(p) Baro. Press.	Port	Purge Time	O2
15A	3	17:01	84 °F	—o—	0.000	30.01	#3	17:17	4.1
		17:14	84		1.000			17:47	4.2
15B	1	17:23	90		0.000			17:47	4.6
		17:37	92		1.000			18:17	4.0
15C	2	17:47	92		0.000				3.6
		18:00	92		1.000				

	Test # 15A			Test # 15B			Test # 15C		
	SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality N	0.01008	0.01008		0.01008	0.01008		0.01008	0.01008	
Dilution Factor F	10	1		10	1		10	1	
Spike ~~Blank~~ B		4.0			4.0			4.0	
		4.0			4.0			4.0	
		3.9			3.9			3.9	
Averages		3.97			3.97			3.97	
Ml. of Titrant A	8.4	4.1		8.4	4.4		9.0	4.1	
	8.3			8.7			9.1		
	8.3			8.7			9.1		
Averages	8.33	4.1		8.60	4.4		9.07	4.1	
460 + T	544	544		551	551		552	552	
Sample Vol. V	1.036	1.036		1.036	1.036		1.046	1.046	
P + p	30.01	30.01		30.01	30.01		30.01	30.01	
A - B	8.33	0.13		8.60	0.43		9.07	0.13	

$$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$$

$$SO2 = \frac{(8.36)(.01008)(10)(544)24}{(1.036)(30.01)}$$

$SO_2 =$ 353 SO3 = 0.6

$$SO3 = \frac{(0.13)(.01008)(1)(544)24}{(1.036)(30.01)}$$

$$SO2 = \frac{(8.60)(.01008)(10)(551)24}{(1.036)(30.01)}$$

SO2 = 369

$$SO3 = \frac{(0.43)(.01008)(1)(551)24}{(1.036)(30.01)}$$

SO3 = 1.8

$$SO2 = \frac{(9.07)(.01008)(10)(552)24}{(1.046)(30.01)}$$

SO2 = 386

$$SO3 = \frac{(0.13)(.01008)(1)(552)24}{(1.046)(30.01)}$$

SO3 = 0.6

8830-6

Local Test Site B

SOx DATA SHEET

Date 2-6-78 Probe ~~Length~~ Location ESP Outlet

Unit # 14 Fuel Reload From dead storage Load

Test No.	Box No.	Sample Time	Meter Temp. (T)	(P) Press.	Meter Reading	(P) Baro. Press.	Port	Purge Time	O2
15D	1	19:00	89	—o—	0.000	30.01	#1	19:15	6.7
		19:13	89		1.000			19:45	6.9
15E	2	19:27	87		0.000			19:45	6.8
		19:41	87		1.000			20:15	6.8
15F	3	19:44	87		0.000				6.7
		19:57	87		1.000				

	Test # 15D			Test # 15E			Test # 15F		
	SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality N	0.01008	0.01008		0.01008	0.01008		0.01008	0.01008	
Dilution Factor F	10	1		10	1		10	1	
Spike ~~Blank~~ B	—	4.0			4.0			4.0	
		4.0			4.0			4.0	
		3.9			3.9			3.9	
Averages		3.97			3.97			3.97	
Ml. of Titrant A	2.6	4.1		2.7	4.1		2.9	4.1	
	2.7			2.7			2.9		
	2.7			2.7			3.0		
Averages	2.67	4.1		2.70	4.1		2.93	4.1	
460 + T	549	549		547	547		547	547	
Sample Vol. V	1.036	1.036		1.036	1.036		1.036	1.036	
P + p	30.01	30.01		30.01	30.01		30.01	30.01	
A - B	2.67	0.13		2.70	0.13		2.93	0.13	

$$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$$

$$SO2 = \frac{(2.67)(.01008)(10)(549)24}{(1.036)(30.01)}$$

SO2 = 114 SO3 = 0.6

$$SO3 = \frac{(0.13)(.01008)(1)(549)24}{(1.036)(30.01)}$$

$$SO2 = \frac{(2.70)(.01008)(10)(547)24}{(1.036)(30.01)}$$

SO2 = 115

$$SO3 = \frac{(0.13)(.01008)(1)(547)24}{(1.036)(30.01)}$$

SO3 = 0.6

$$SO2 = \frac{(2.93)(.01008)(10)(547)24}{(1.036)(30.01)}$$

SO2 = 125

$$SO3 = \frac{(0.13)(.01008)(1)(547)24}{(1.036)(30.01)}$$

SO3 = 0.6

8830-6

Local Test Site B

SOx DATA SHEET

Date 2-7-78 Probe ~~Length~~ Location: ESP Outlet

Unit # 14 Fuel Reload From dead storage Load

Test No.	Box No.	Sample Time	Meter Temp. (T)	(P) Meter Press.	Meter Reading	(p) Baro. Press.	Port	Purge Time	O2
16A	2	14:45	86	-0-	0.000	30.05	#4	15:02	8.8
		14:58	85		1.020			15:32	8.2
16B	1	15:06	85		0.000			15:32	8.4
		15:18	85		1.000			16:02	8.2
16C	3	15:33	85		0.000				8.3
		15:46	85		1.000				

	Test # 16A			Test # 16B			Test # 16C		
	SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality N	0.01008	0.01008		0.01008	0.01008		0.01008	0.01008	
Dilution Factor F	10	1		10	1		10	1	
Spike		4.0			4.0			4.0	
Blank B		4.0			4.0			4.0	
		3.9			3.9			3.9	
Averages		3.97			3.97			3.97	
Ml. of Titrant A	4.2	4.1		4.0	4.1		5.4	4.2	
	4.1			4.1			5.4		
	4.1			4.1			5.4		
Averages	4.13	4.1		4.07	4.1		5.40	4.2	
460 + T	546	546		545	545		545	545	
Sample Vol. V	1.057	1.057		1.036	1.036		1.036	1.036	
P + p	30.05	30.05		30.05	30.05		30.05	30.05	
A - B	4.13	0.13		4.07	0.13		5.40	0.23	

$$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$$

$$SO2 = \frac{(4.13)(.01008)(10)(546)24}{(1.057)(30.05)}$$

SO2 = 172 SO3 = 0.5

$$SO3 = \frac{(0.13)(.01008)(1)(546)24}{(1.057)(30.05)}$$

$$SO2 = \frac{(4.07)(.01008)(10)(545)24}{(1.036)(30.05)}$$

SO2 = 172

$$SO3 = \frac{(0.13)(.01008)(1)(545)24}{(1.036)(30.05)}$$

SO3 = 0.6

$$SO2 = \frac{(5.40)(.01008)(10)(545)24}{(1.036)(30.05)}$$

SO2 = 229

$$SO3 = \frac{(0.23)(.01008)(1)(545)24}{(1.036)(30.05)}$$

SO3 = 1.0

8830-6

Local Test Site B

SOx DATA SHEET

Date 2-7-78 Probe ~~Length~~ Location: Boiler Outlet

Unit # 14 Fuel Reload From dead storage Load

Test No.	Box No.	Sample Time	Meter Temp. (T)	(P) Meter Press.	Meter Reading	(p) Baro. Press.	Port	Purge Time	O2
16D	2	16:50	83	—o—	0.000	30.04	#3	17:10	6.8
		17:07	85		1.000			17:40	
16E	1	17:18	88		0.000			17:41	6.7
		17:31	88		1.000			18:11	6.5
16F	3	17:40	94		0.000			18:12	6.7
		17:53	95		1.000			18:42	6.5

	Test # 16D			Test # 16E			Test # 16F		
	SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality N	0.01008	0.01008		0.01008	0.01008		0.01008	0.01008	
Dilution Factor F	10	1		10	1		10	1	
Spike ~~Blank~~ B		4.0			4.0			4.0	
		4.0			4.0			4.0	
		3.9			3.9			3.9	
Averages		3.97			3.97			3.97	
Ml. of Titrant A	8.5	4.1		8.7	4.1		9.0	4.1	
	8.5			8.7			8.9		
	8.3			8.9			9.0		
Averages	8.43	4.1		8.77	4.1		8.97	4.1	
460 + T	544	544		548	548		555	555	
Sample Vol. V	1.036	1.036		1.036	1.036		1.036	1.036	
P + p	30.04	30.04		30.04	30.04		30.04	30.04	
A - B	8.43	0.13		8.77	0.13		8.97	0.13	

$$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$$

$$SO2 = \frac{(8.43)(.01008)(10)(544)24}{(1.036)(30.04)}$$

SO2 = 356 SO3 = 0.5

$$SO3 = \frac{(0.13)(.01008)(1)(544)24}{(1.036)(30.04)}$$

$$SO2 = \frac{(8.77)(.01008)(10)(548)24}{(1.036)(30.04)}$$

SO2 = 374

$$SO3 = \frac{(0.13)(.01008)(1)(548)24}{(1.036)(30.04)}$$

SO3 = 0.6

$$SO2 = \frac{(8.97)(.01008)(10)(555)24}{(1.036)(30.04)}$$

SO2 = 387

$$SO3 = \frac{(0.13)(.01008)(1)(555)24}{(1.036)(30.04)}$$

SO3 = 0.6

8830-6

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Test B

SOx DATA SHEET

Date 3/17/78 Probe Location & Probe Length B6R OUT / Port #1 / 3'

Unit # 14 Fuel Hatfield Load 160 Klb/hr

Test Description:

Test No.	Box No.	Sample Time	Meter Temp. (T)	(P) Press.	Meter Reading	(P) Baro. Press.	Port	Purge Time	O2
30A	1	12:05	110	-0-	0.000	29.85	1	12:21	6.1
		12:19	111		1.001			12:54	6.0
30B	2	12:35	111		0.000		1	12:55	6.1
		12:51	112		1.000			1:25	6.2
30C	3	1:04	118		0.000		1	1:26	—
		1:21	—		1.000			1:57	6.2

SAMPLED BY

	Test # 30A			Test # 30B			Test # 30C		
	SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality N	.009			.009			.009		
Dilution Factor F	10	1		10	1		10	1	
Spike Blank B	0.01	3.9			3.9			3.9	
Averages									
Ml. of Titrant A	10.4	21.4		6.8	27.2		4.6	33.7	
	10.2			6.3			4.5		
	10.0			6.7			4.6		
Averages	10.2	21.4		6.6	27.2		4.6	33.7	
460 + T	570			571			578		
Sample Vol. V	1.036			1.036			1.036		
P + p	29.85			29.85			29.85		
A - B	10.2	17.5		6.6	23.3		4.6	29.8	

TITRATED BY

$$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$$

$$SO2 = \frac{(10.2)(.009)(10)(570)24}{(1.036)(29.85)}$$

SO2 = 406.1 SO3 = 69.7

$$SO3 = \frac{(17.5)(.009)(1)(570)24}{(1.036)(29.85)}$$

SO2 @ 3% O2 = 491

SO3 @ 3% O2 = 84

SOx @ 3% O2 = 575

$$SO2 = \frac{(6.6)(.009)(10)(570)24}{(1.036)(29.85)}$$

SO2 = 262.8

$$SO3 = \frac{(23.3)(.009)(1)(570)24}{(1.036)(29.85)}$$

SO3 = 108.2

SO2 @ 3% O2 = 319

SO3 @ 3% O2 = 131

SOx @ 3% O2 = 450

$$SO2 = \frac{(4.6)(.009)(10)(570)24}{(1.036)(29.85)}$$

SO2 = 185.7

$$SO3 = \frac{(29.7)(.009)(1)(570)24}{(1.036)(29.85)}$$

SO3 = 1360

SO2 @ 3% O2 = 226

SO3 @ 3% O2 = 1654

SOx @ 3% O2 = 1880

B

SOx DATA SHEET

Date 3/17/78 Probe Location & Probe Length [illegible] 1 3'

Unit # 14 Fuel Hatfield Load 160 klb/hr.

Test Description:

Test No.	Box No.	Sample Time	Meter Temp. (T)	(P) Meter Press.	Meter Reading	(p) Baro. Press.	Port	Purge Time	O2
30D		3:02	106	-0-	0.000	24.85		330	7.9
		3:17	106		1.001			4:00	
30E		3:24	107		0.000			4:02	8.1
		3:40	107		1.001			4:33	
30F		3:50	107		0.000			4:34	8.7
		4:05	107		1.000			5:05	

SAMPLED BY FS

		Test #30D			Test #30E			Test #30F		
		SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality	N	.009			.009			.009		
Dilution Factor	F	10	1		10	1		10	1	
Blank	B	One Blank 3.9 ml	Spike		3.9 ml	spike		— no	spike	
Averages										
Ml. of Titrant	A	12.5 11.0 11.2	14.5		— 5.0 4.6	7.0		7.65 7.5 7.6	5.5	
Averages		11.6	14.5		4.8	7.0		7.6	5.5	
460 + T		566			567			567		
Sample Vol.	V	1.036			1.036			1.035		
P + p		29.85			29.85			29.85		
A - B		7.67	14.5		0.9	7.0		7.6	5.5	

TITRATED BY F.S.

$$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$$

$$SO2 = \frac{(7.67)(.009)(10)(566)24}{(1.036)(29.85)}$$

SO2 = 303.2 SO3 = 57.3

$$SO3 = \frac{(14.5)(.009)(1)(566)24}{(1.036)(29.85)}$$

SO2 @ 3% O2 = 417
SO3 @ 3% O2 = 79
SOx @ 3% O2 = 496

$$SO2 = \frac{(0.9)(.009)(10)(567)24}{(1.036)(29.85)}$$

SO2 = 35.64

$$SO3 = \frac{(7.0)(.009)(1)(567)24}{(1.036)(29.85)}$$

SO3 = 277

SO2 @ 3% O2 = 50
SO3 @ 3% O2 = 39
SOx @ 3% O2 = 222

$$SO2 = \frac{(7.6)(.009)(10)(567)24}{(1.036)(29.85)}$$

SO2 = 301.0

$$SO3 = \frac{(5.5)(.009)(1)(567)24}{(1.035)(29.85)}$$

SO3 = 21.8

SO2 @ 3% O2 = 440
SO3 @ 3% O2 = 32
SOx @ 3% O2 = 472

Test B

SOx DATA SHEET

Date 3/18/78 Probe Location & Probe Length ESP OUT 13'

Unit # 14 Fuel Kentucky (Cumberland) Load 160 klb/hr

Test Description:

Test No.	Box No.	Sample Time	Meter Temp.(T)	(P) Meter Press.	Meter Reading	(p) Baro. Press.	Port	Purge Time	O2
31A	1	11:20	101	-0-	0.000	30.13		11:50	8.1
		11:42	101.5		1.000			12:20	
31B	2	11:50	101.5		0.000			30 min	7.6
		12:02	102		1.000				
31C	3	12:14	102		0.000			30 min	7.5
		12:28	102		1.000				

SAMPLED BY ES

	Test #			Test #			Test #		
	SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality N	.011			.011			.011		
Dilution Factor F	10	1		10	1		10	1	
Spike		3.9 ml			3.9 ml			3.9 ml	
~~Blank~~ Blank B	0 ml			0 ml			0 ml		
Averages									
Ml. of Titrant A	5.6	4.1		6.5	4.5		5.2	5.0	
	5.7			6.5			5.3		
	5.7			6.6			5.3		
Averages	5.7	4.1		6.5	4.5		5.3	5.0	
460 + T	561			562			562		
Sample Vol. V	1.036								
P + p	30.13								
A - B	5.7	0.2		6.5	0.6		5.3	1.1	

TITRATED BY ES

$$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$$

$$SO2 = \frac{(5.7)(.011)(10)(561)24}{(1.036)(30.13)}$$

SO2 = 270.4 SO3 = 1.0

$$SO3 = \frac{(0.2)(.011)(1)(561)24}{(1.036)(30.13)}$$

SO2 @ 3% O2 = 377

SO3 @ 3% O2 = 1

SOx @ 3% O2 = 378

$$SO2 = \frac{(6.5)(.011)(10)(562)24}{(1.036)(30.13)}$$

SO2 = 309.0

$$SO3 = \frac{(0.6)(.011)(1)(562)24}{(1.036)(30.13)}$$

SO3 = 2.85

SO2 @ 3% O2 = 415

SO3 @ 3% O2 = 4

SOx @ 3% O2 = 419

$$SO2 = \frac{(5.3)(.011)(10)(562)24}{(1.036)(30.13)}$$

SO2 = 251.9

$$SO3 = \frac{(1.1)(.011)(1)(562)24}{(1.036)(30.13)}$$

SO3 = 5.23

SO2 @ 3% O2 = 336

SO3 @ 3% O2 = 7

SOx @ 3% O2 = 343

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Fuel B

SOx DATA SHEET

Date 7/18/78 Probe Location & Probe Length BLR Out /3ft

Unit # 14 Fuel Kentucky (Cumberland) Load 160 klb/hr

Test Description:

Test No.	Box No.	Sample Time	Meter Temp.(T)	(P) Meter Press.	Meter Reading	(P) Baro. Press.	Port	Purge Time	O2
31D		1:20	85	-0-	0.000	30.13		1:58	5.6
		1:32	92		1.003			2:23	
31E		2:00	95		0.000			2:24	5.2
		2:16	98		1.000			2:52	
31F		2:37	98		0.000			2:53	5.2
		2:52	98		1.000			7:23	

SAMPLED BY ES

	Test #31D			Test #31E			Test #31F		
	SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality N	.011			.011			.011		
Dilution Factor F		—			3.9			2.9	
Spike Blank B	One			One			One		
Averages									
Ml. of Titrant A	6.45 6.50 6.45	31.3		7.5 7.7 7.8	4.2		6.3 6.25 6.3	7.5	
Averages	6.46	31.3		7.6	4.2		6.3	7.5	
460 + T	548				536		558		
Sample Vol. V	1.056								
P + p	30.13								
A - B	6.46	31.3		7.6	0.3		6.3	7.6	

TITRATED BY SC

$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$

$SO2 = \frac{(6.46)(.011)(10)(548)24}{(1.056)(30.13)}$

SO2 = 249.4 SO3 = 175

$SO3 = \frac{(0.3)(.011)(1)(548)24}{(1.056)(30.13)}$

SO2 @ 3% O2 = 550
SO3 @ 3% O2 = 169
SOx @ 3% O2 = 519

$SO2 = \frac{(7.6)(.011)(10)(536)24}{(1.056)(30.13)}$

SO2 = 357.4

$SO3 = \frac{(0.3)(.011)(1)(536)24}{(1.056)(30.13)}$

SO3 = 14

SO2 @ 3% O2 = 407
SO3 @ 3% O2 = 2
SOx @ 3% O2 = 224

$SO2 = \frac{(6.3)(.011)(10)(558)24}{(1.056)(30.13)}$

SO2 = 297.3

$SO3 = \frac{(7.6)(.011)(1)(558)4}{(1.056)(30.13)}$

SO3 = 17.0

SO2 @ 3% O2 = 339
SO3 @ 3% O2 = 19
SOx @ 3% O2 = 359

Local B

SOx DATA SHEET

Date 3/20/78 Probe Location & Probe Length BLP OUT

Unit # 14 Fuel Hatfield Load 160 klb/Hr.

Test Description:

Test No.	Box No.	Sample Time	Meter Temp. (T)	(P) Meter Press.	Meter Reading	(P) Baro. Press.	Port	Purge Time	O2
32A	1	11:27	108	-0-	0.000	29.94		11:42	5.7
		11:40	109		1.000			12:07	
32B	2	11:51	109		0.000			12:08	5.5
		12:04	109		1.001			12:32	
32C	3	12:12	109		0.000			12:33	5.4
		12:25	109		1.000			13:02	

SAMPLED BY

	Test #32A			Test #32B			Test #32C		
	SO2	SO3	SOx	SO2	SO3	SOx	SO2	SO3	SOx
Normality N	.011			.011			.011		
Dilution Factor F	10	1		10	1		10	1	
Spike -	4.9ml				No Spike			No Spike	
Blank B	0ml								
Averages									
Ml. of Titrant A	7.0	9.8		7.7	3.85		6.9	14	
	6.6			7.9			6.8		
	7.05			7.7			6.95		
Averages	6.88	9.8		7.7			6.9		
460 + T	569			569			569		
Sample Vol. V	1.036								
P + p	29.94								
A - B	6.88	4.9		7.7	3.85		6.9	14	

TITRATED BY

$$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$$

$$SO2 = \frac{(6.88)(.011)(10)(569)24}{(1.036)(29.94)}$$

SO2 = 333.2 SO3 = 2373

$$SO3 = \frac{(4.9)(.011)(1)(569)24}{(1.036)(29.94)}$$

SO2 @ 3% O2 = 392
SO3 @ 3% O2 = 28
SOx @ 3% O2 = 420

$$SO2 = \frac{(7.7)(.011)(10)(569)24}{(1.036)(29.94)}$$

SO2 = 372.11

$$SO3 = \frac{(3.85)(.011)(1)(569)24}{(1.036)(29.94)}$$

SO3 = 18.6

SO2 @ 3% O2 = 432
SO3 @ 3% O2 = 22
SOx @ 3% O2 = 325

$$SO2 = \frac{(6.9)(.011)(10)(569)24}{(1.036)(29.94)}$$

SO2 = 333.7

$$SO3 = \frac{(14)(.011)(1)(569)24}{(1.036)(29.94)}$$

SO3 = 67.8

SO2 @ 3% O2 = 385
SO3 @ 3% O2 = 78
SOx @ 3% O2 = 463

Test B

SOx [illegible] Sheet

Date 3/21/78 Probe Location & Probe Length 3' / BLR OUT

Unit # 14 Fuel Southeast Load 160 klb/hr

Test Description:

Test No.	Box No.	Sample Time	Meter Temp. (T)	(p) Meter Press.	Meter Reading	(P) Baro. Press.	Port	Purge Time	O2
33A	1	12:24	93	-0-	0.000	29.56		12:45	5.1
		12:42	95		1.000			1:[illegible]	
		Test not completed because of Meter failure							

SAMPLED BY FS

purged with Ambient Air

	Test #33A SO2	SO3	SOx	Test # SO2	SO3	SOx	Test # SO2	SO3	SOx
Normality N	.011								
Dilution Factor F	10	1							
Spike		4.0 ml							
Blank B	0 ml								
Averages									
Ml. of Titrant A	6.9 7.0 7.05	4.9							
Averages	7.0								
460 + T	554								
Sample Vol. V	1.036								
P + p	29.56								
A - B	7.0	.9							

TITRATED BY JBC

$SO2 = \frac{(A-B)(N)(F)(460+T)(24)}{V(P+p)}$

$SO2 = \frac{(7.0)(.011)(10)(554)24}{(1.036)(29.56)}$

SO2 = 346 SO3 = 4.45

$SO3 = \frac{(.9)(.011)(1)(554)24}{(1.036)(29.56)}$

SO2 @ 3% O2 = 342

SO3 @ 3% O2 = 5

SOx @ 3% O2 = 347

$SO2 = \frac{(\ )(\ )(\ )(\ )24}{(\ )(\ )}$

SO2 = [ ]

$SO3 = \frac{(\ )(\ )(\ )(\ )24}{(\ )(\ )}$

SO3 = [ ]

SO2 @ 3% O2 =

SO3 @ 3% O2 =

SOx @ 3% O2 = 226

$SO2 = \frac{(\ )(\ )(\ )(\ )24}{(\ )(\ )}$

SO2 = [ ]

$SO3 = \frac{(\ )(\ )(\ )(\ )24}{(\ )(\ )}$

SO3 = [ ]

SO2 @ 3% O2 =

SO3 @ 3% O2 =

SOx @ 3% O2 =

SECTION 4.0

SPECIAL TESTS DATA

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4.2	PARTICLE SIZE DISTRIBUTION - BRINK	230
	- SASS	242
	- BAHCO	262

KVB

SMOKE SPOT DATA SHEET

TEST SITE B

TEST NO.	NO. PUMPS	READING	PARTICULATES lb/10^6BTU	COMBUSTIBLES %	COMBUSTIBLES lb/10^6BTU
3	1	8	10.316	43.4	4.477
4	1	4,4	9.650	55.2	5.327
4	2	6,7	9.650	55.2	5.327
6	1	2,3	11.653	40.2	4.685
6	2	3,3.5	11.653	40.2	4.685
6	4	4	11.653	40.2	4.685
6	10	6.5	11.653	40.2	4.685
8	1	2,3	15.512	32.4	5.026
8	2	3,3	15.512	32.4	5.026
9	1	4,4	8.163	59.7	4.873
9	2	5,5,5.5	8.163	59.7	4.873
11	1	3,2.5	7.214	64.0	4.617
11	2	4,4.5	7.214	64.0	4.617
12	1	4,5	9.566	62.6	5.988
12	2	6,6	9.566	62.6	5.988
17	1	1,2	10.655	62.8	6.691
17	2	3,3	10.655	62.8	6.691
17	5	6,6	10.655	62.8	6.691
18	1	2,3	12.764	64.2	8.194
18	2	4,4½	12.764	64.2	8.194

15900

KVB

SMOKE SPOT DATA SHEET

TEST SITE B

TEST NO.	NO. PUMPS	READING	PARTICULATES lb/10^{6}BTU	COMBUSTIBLES %	COMBUSTIBLES lb/10^{6}BTU
19	1	4,5	10.529	62.0	6.528
19	2	6½,6½	10.529	62.0	6.528
20	1	3	10.806	65.1	7.035
20	2	4,5	10.806	65.1	7.035
21	1	2,2	9.245	55.2	5.103
21	2	3,4	9.245	55.2	5.103
22	1	6,7	12.265	53.3	6.537
22	2	8,9	12.265	53.3	6.537
23	1	1,2	9.587	60.9	5.838
23	2	2½,3	9.587	60.9	5.838
24	1	2,3	13.880	55.3	7.676
24	2	4,4	13.880	55.3	7.676
25	1	3,3	15.754	47.0	7.404
25	2	5½,6	15.754	47.0	7.404
26	1	4,4	12.764	57.1	7.288
26	2	5,5	12.764	57.1	7.288
27	1	2,2	11.746	57.3	6.730
27	2	3½,3½	11.746	57.3	6.730
28	1	4,4½	9.980	70.3	7.016
28	2	4½,5	9.980	70.3	7.016

15900

KVB

BRINK CASCADE IMPACTOR DATA REDUCTION

TEST NO. 5b
TEST SITE B
TEST DATE 1/8/78
SAMPLE LOCATION Boiler Out port #3

LOAD 50 %
% O_2 6.6
FUEL Hatfield
SPECIAL CONDITIONS none

ρp - Density of particles 2.5 g/cm^3
μ - Viscosity of flue gas 2.5×10^{-4} poise
MWs - Molecular wt. flue gas 29.41 g/g mole
ΔP_I - Pressure drop across impactor 13.2 in H_2O
Ps - Absolute stack pressure 29.19 in. Hg
Ts - Absolute stack temperature 890 °R
Qs - Actual flow rate at stack conditions 0.0673 ft^3/min

Vm - Dry gas volume 2.161 SCF
Mn - Total particulate mass 254.9 mgm
Cn - Total concentration 1.821 grains/SCF
I - Percent isokinetics 82.0 %
Vs - Gas velocity 15.56 ft/sec.
Dn - Nozzle diameter 0.115 in.

Stage Number	CYCLONE	1	2	3	4	5	FINAL FILTER
Dj - Jet Diameter, cm		0.2490	0.1775	0.1396	0.0946	0.0731	
Fj - Press. factor, n.d.		0.0210	0.0273	0.0395	0.0903	0.3277	
$D_{s,\overline{50}}$ Stokes diameter, µm		2.92	1.67	1.10	0.53	0.31	
$D_{A,\overline{50}}$ Aerodynamic diameter, µm		4.75	2.67	1.86	0.94	0.58	
$D_{AI,\overline{50}}$ Aerodynamic impaction diameter, µm		4.99	3.00	2.09	1.17	0.79	
Mn - Particulate mass, mgm	218.5	21.4	8.8	3.7	0.9	0.4	1.2
% - Percent of Total	85.72	8.40	3.45	1.45	0.35	0.16	0.47
Cumulative percent	14.28	5.88	2.43	0.98	0.63	0.47	0
Cn - Concentration, grains/SCF	1.561	0.153	0.063	0.026	0.006	0.003	0.009
Cumulative concentration, grains/SCF	1.561	1.714	1.777	1.803	1.809	1.812	1.821

#15900

KVB

BRINK CASCADE IMPACTOR DATA SHEET

TEST NO. 5b LOAD 50%

TEST SITE B % O_2 6.6 (low)

TEST DATE 1/8/78 FUEL Hatfield

SAMPLE LOCATION Blr out port #3 SPECIAL CONDITIONS

GAS VELOCITY DETERMINATION

PITOT TUBE ΔP 0.045 " H_2O BAROMETRIC PRESS in. Hg, P_{bar} 29.25

GAS TEMP. °R, Ts 890 GAS STATIC PRESS in. H_2O −0.7

PITOT CORRECTION FACTOR, Cp 0.837 GAS STATIC PRESS in. Hg abs, Ps 29.19

MOLECULAR WT. FLUE GAS, MWs 29

$$Vs = 85.48\ Cp \left(\frac{Ts\ \Delta P}{Ps\ MWs}\right)^{1/2} = 15.56 \text{ ft/sec}$$

IMPACTOR FLOW RATE DETERMINATION

NOZZLE DIAMETER inches, Dn 0.115

NOZZLE AREA ft^2, An 7.213×10^{-5} $An = \pi(Dn/24)^2$

$Qn = Vs\ An\ 60 = 0.0673$ ft^3/min at nozzle

$Qc = Qs \left(\frac{PsMWs}{1.3Ts}\right)^{1/2} = 0.0519$ ft^3/min corrected to calibration conditions

PRESSURE DROP ACROSS IMPACTOR FROM CALIBRATION CURVE 12.5 in. H_2O

OPERATING VACUUM (corrected for static pressure of duct) 13.2 in. H_2O

ISOKINETICS DETERMINATION

	SAMPLE TIME (θ)	METER READING (Vm)	METER TEMP (Tm)
INITIAL	0	0.000	96
FINAL	72	2.239	96
Δ	72	2.319 *	—

$\%H_2O$ = 6.5 %

$$I = \frac{1.667\ Ts\ Vm\ P_{bar}}{\theta\ Tm\ Vs\ Ps\ An\left(1-\frac{\%H_2O}{100}\right)} = 82.0\ \%$$

* meter correction factor is 1.036

#15900

KVB

BRINK CASCADE IMPACTOR LAB WORKSHEET

TEST No. 5B LOCATION site B blr out port #3

TEST DATE 1/8/78 ENGINEER

TEST DESCRIPTION

PRE TEST WEIGHTS (GRAMS)

PLATE NO.		CYCLONE	1	2	3	4	5	FINAL FILTER
DATE WT.								
TARE WT.	1	0.3933	3.4129	3.2718	3.4981	3.4646	3.3017	0.0449
	2		3.4131	3.2718	3.4980	3.4646	3.3018	0.0447
	3		3.4131	3.2718	3.4981	3.4647	3.3018	0.0446
	4							
AVERAGE		0.3933	3.4130	3.2718	3.4981	3.4646	3.3018	0.0447

POST TEST WEIGHTS (GRAMS)

DATE WT.								
GROSS WT.	1	0.6118	3.4344	3.2806	3.5018	3.4655	3.3022	0.0459
	2							
	3							
	4							
AVERAGE		0.6118	3.4344	3.2806	3.5018	3.4655	3.3022	0.0459

NET TEST RESULTS (MILLIGRAMS)

NET WT.	0.2185	0.0214	0.0088	0.0037	0.0009	0.0004	0.0012
PERCENT	85.72	8.40	3.45	1.45	0.35	0.16	0.47

TOTAL NET WEIGHT 254.9 mgm

#15900

KVB

BRINK CASCADE IMPACTOR DATA REDUCTION

TEST NO. 24 LOAD 100%

TEST SITE B % O_2 5%

TEST DATE 3/2/78 FUEL Southeast

SAMPLE LOCATION Multiclone SPECIAL CONDITIONS none

ρp - Density of particles 2.5 g/cm^3

μ - Viscosity of flue gas 2.7×10^{-4} poise

MWs - Molecular wt. flue gas 29.62 g/g mole

ΔP_I - Pressure drop across impactor 21.6 in H_2O

Ps - Absolute stack pressure 29.57 in. Hg

Ts - Absolute stack temperature 1000 °R

Qs - Actual flow rate at stack conditions 0.0713 ft^3/min

Vm - Dry gas volume 2.011 SCF

Mn - Total particulate mass 55.2 mgm

Cn - Total concentration 0.423 grains/SCF

I - Percent isokinetics 95 %

Vs - Gas velocity 42.03 ft/sec.

Dn - Nozzle diameter 0.072 in.

Stage Number	CYCLONE	1	2	3	4	5	FINAL FILTER
Dj - Jet Diameter, cm		0.2490	0.1775	0.1396	0.0946	0.0731	
Fj - Press. factor, n.d.		0.0210	0.0273	0.0395	0.0903	0.3277	
$D_{S,\overline{50}}$ Stokes diameter, µm		2.90	1.64	1.07	0.50	0.29	
$D_{A,\overline{50}}$ Aerodynamic diameter, µm		4.75	2.75	1.84	0.92	0.55	
$D_{AI,\overline{50}}$ Aerodynamic impaction diameter, µm		5.04	3.03	2.11	1.18	0.795	
Mn - Particulate mass, mgm	20.5	11.0	8.7	6.7	3.5	2.1	2.7
% - Percent of Total	37.14	19.93	15.76	12.14	6.34	3.80	4.89
Cumulative percent	62.86	42.93	27.17	15.03	8.69	4.89	0
Cn - Concentration, grains/SCF	0.157	0.084	0.067	0.051	0.027	0.016	0.021
Cumulative concentration, grains/SCF	0.157	0.241	0.308	0.359	0.386	0.402	0.423

#15900

KVB

BRINK CASCADE IMPACTOR DATA SHEET

TEST NO. 24 LOAD 100%

TEST SITE B % O_2 5%

TEST DATE 3/2/78 FUEL Southeast

SAMPLE LOCATION Multiclone Out SPECIAL CONDITIONS None

GAS VELOCITY DETERMINATION

PITOT TUBE ΔP 0.30 BAROMETRIC PRESS in. Hg, P_{bar} 29.97

GAS TEMP. °R, Ts 1000 GAS STATIC PRESS in. H_2O -5.4

PITOT CORRECTION FACTOR, Cp 0.837 GAS STATIC PRESS in. Hg abs, Ps 29.57

MOLECULAR WT. FLUE GAS, MWs 29.4

$$Vs = 85.48\ Cp \left(\frac{Ts\ \Delta P}{Ps\ MWs}\right)^{\frac{1}{2}} = 42.03 \text{ ft/sec}$$

IMPACTOR FLOW RATE DETERMINATION

NOZZLE DIAMETER inches, Dn 0.072

NOZZLE AREA ft^2, An 0.00002827 $An = \pi(Dn/24)^2$

$Qn = Vs\ An\ 60 = 0.0713$ ft^3/min at nozzle

$Qc = Qs \left(\frac{PsMWs}{1.3Ts}\right)^{\frac{1}{2}} = 0.0583$ ft^3/min corrected to calibration conditions

PRESSURE DROP ACROSS IMPACTOR FROM CALIBRATION CURVE 16.2 in. H_2O

OPERATING VACUUM (corrected for static pressure of duct) 21.6 in. H_2O

ISOKINETICS DETERMINATION

	SAMPLE TIME (θ)	METER READING (Vm)	METER TEMP (Tm)
INITIAL	12:05	0.000	85
FINAL	13:03	2.000	89
Δ	58'7"	2.072*	547

$\%H_2O$ = 6 %

$$I = \frac{1.667\ Ts\ Vm\ P_{bar}}{\theta\ Tm\ Vs\ Ps\ An\left(1-\frac{\%H_2O}{100}\right)} = 95\ \%$$

* meter correction factor = 1.036

#15900

KVB

BRINK CASCADE IMPACTOR LAB WORKSHEET

TEST No. 24 - MECH OUT LOCATION [redacted] - SITE B

TEST DATE 2-2-78 ENGINEER

TEST DESCRIPTION

PRE TEST WEIGHTS (GRAMS)

PLATE NO.		CYCLONE	1	2	3	4	5	FINAL FILTER
DATE WT.		2-4-78	2-2-78	2-2-78	2-2-78	2-2-78	2-2-78	2-2-78
TARE WT.	1	.3857	3.4135	3.2712	3.4976	3.4643	3.3018	.0427
	2	—	3.4135	3.2711	3.4974	3.4644	3.3018	.0428
	3	—	—	—	—	—	—	—
	4	—	—	—	—	—	—	—
AVERAGE		.3857	3.4135	3.2711	3.4975	3.4643	3.3018	.0427

POST TEST WEIGHTS (GRAMS)

DATE WT.		3-4-78	3-4-78	3-4-78	3-4-78	3-4-78	3-4-78	3-4-78
GROSS WT.	1	.4062	3.4247	3.2798	3.5042	3.4678	3.3039	.0454
	2	—	3.4244	3.2799	3.5043	3.4679	3.3039	.0454
	3	—	—	—	—	—	—	—
	4	—	—	—	—	—	—	—
AVERAGE		.4062	3.4245	3.2798	3.5042	3.4678	3.3039	.0454

NET TEST RESULTS ([redacted] GRAMS)

NET WT.	.0205	.0110	.0087	.0067	.0035	.0021	.0027
PERCENT	37.14	19.93	15.76	12.14	6.34	3.80	4.89

TOTAL NET WEIGHT 55.2 mgm

FIGURE 235

TM #15900-511

KVB

BRINK CASCADE IMPACTOR DATA REDUCTION

TEST NO. 25

TEST SITE B

TEST DATE 3-3-78

SAMPLE LOCATION Mechanical Outlet

LOAD

% O_2

FUEL

SPECIAL CONDITIONS

ρp - Density of particles 2.5 g/cm^3

μ - Viscosity of flue gas 2.66×10^{-4} poise

MWs - Molecular wt. flue gas 29.56 g/g mole

ΔP_I - Pressure drop across impactor 18.25 in H_2O

Ps - Absolute stack pressure 29.03 in. Hg

Ts - Absolute stack temperature 980 °R

Qs - Actual flow rate at stack conditions .07599 ft^3/min

Vm - Dry gas volume _____ SCF

Mn - Total particulate mass _____ mgm

Cn - Total concentration _____ grains/SCF

I - Percent isokinetics _____ %

Vs - Gas velocity _____ ft/sec.

Dn - Nozzle diameter _____ in.

Stage Number	CYCLONE	1	2	3	4	5	FINAL FILTER
Dj - Jet Diameter, cm		0.2490	0.1775	0.1396	0.0946	0.0731	
Fj - Press. factor, n.d.		0.0210	0.0273	0.0395	0.0903	0.3277	
$D_{S,50}$ Stokes diameter, µm		2.78	1.57	1.03	0.48	0.27	
$D_{A,50}$ Aerodynamic diameter, µm		4.56	2.64	1.76	0.88	0.52	
$D_{AI,50}$ Aerodynamic impaction diameter, µm		4.84	2.91	2.03	1.13	0.765	
Mn - Particulate mass, mgm	14.3	7.9	9.9	3.4	2.6	1.2	0.0
% - Percent of Total	36.4	20.1	25.2	8.7	6.6	3.1	0.0
Cumulative percent below stage	63.6	43.5	18.3	9.7	3.1	0.0	
Cn - Concentration, grains/SCF							
Cumulative concentration, grains/SCF							

#15900

KVB

BRINK CASCADE IMPACTOR DATA SHEET

TEST NO. 25 LOAD

TEST SITE B % O_2

TEST DATE 3/3/78 FUEL

SAMPLE LOCATION Mech Out SPECIAL CONDITIONS

GAS VELOCITY DETERMINATION

PITOT TUBE ΔP 0.29 BAROMETRIC PRESS in. Hg, P_{bar} 29.45

GAS TEMP. °R, Ts 980 GAS STATIC PRESS in. H_2O -5.7 "H_2O

PITOT CORRECTION FACTOR, Cp 0.837 GAS STATIC PRESS in. Hg abs, Ps 29.03

MOLECULAR WT. FLUE GAS, MW_s 29.4

$$Vs = 85.48\ Cp \left(\frac{Ts\ \Delta P}{Ps\ MWs}\right)^{1/2} = 41.28 \text{ ft/sec}$$

IMPACTOR FLOW RATE DETERMINATION

NOZZLE DIAMETER inches, Dn 0.075

NOZZLE AREA ft^2, An 3.0679×10^{-5} $An = \pi(Dn/24)^2$

$Qn = Vs\ An\ 60 = 0.07599$ ft^3/min at nozzle

$Qc = Qs \left(\frac{PsMWs}{1.3Ts}\right)^{1/2} = 0.06219$ ft^3/min corrected to calibration conditions

PRESSURE DROP ACROSS IMPACTOR FROM CALIBRATION CURVE 18.25 in. H_2O

OPERATING VACUUM (corrected for static pressure of duct) 23.95 in. H_2O

ISOKINETICS DETERMINATION

	SAMPLE TIME (θ)	METER READING (Vm)	METER TEMP (Tm)
INITIAL		0.000	91
FINAL	39 min 36 sec	1.500	89
Δ		1.554*	550 °R

*meter correction factor is 1.036

$\%H_2O$ = 6.8 %

$$I = \frac{1.667\ Ts\ Vm\ P_{bar}}{\theta\ Tm\ Vs\ Ps\ An\left(1-\frac{\%H_2O}{100}\right)} = 96.7\ \%$$

#15900

KVB

BRINK CASCADE IMPACTOR LAB WORKSHEET

TEST No. 26 LOCATION Site B - mechout

TEST DATE 3/5/78 ENGINEER

TEST DESCRIPTION

PRE TEST WEIGHTS (GRAMS)

PLATE NO.		CYCLONE	1	2	3	4	5	FINAL FILTER
DATE WT.		3/5/78						
TARE WT.	1		3.4132	3.2709	3.4978	3.4642	3.3021	.0374
	2	.3874	3.4131	3.2710	3.4978	3.4642	3.3022	.0376
	3							
	4							
AVERAGE			3.4131	3.2709	3.4978	3.4642	3.3021	.0375

POST TEST WEIGHTS (GRAMS)

DATE WT.								
GROSS WT.	1	.4171	3.4214	3.2813	3.5018	3.4656	3.3028	.0386
	2		3.4215	3.2815	3.5018	3.4659	3.3032	.0387
	3							
	4							
AVERAGE		.4171	3.4215	3.2814	3.5018	3.4658	3.3030	0.0387

NET TEST RESULTS (MILLIGRAMS)

NET WT.	29.7	8.4	10.5	4.0	1.6	0.9	1.2
PERCENT	52.8	14.9	18.7	7.1	2.8	1.6	2.1

TOTAL NET WEIGHT 56.3 mgm

#15900

KVB

BRINK CASCADE IMPACTOR DATA REDUCTION

TEST NO. 26 LOAD _____

TEST SITE B % O_2 _____

TEST DATE 3/5/78 FUEL _____

SAMPLE LOCATION Mech. Out SPECIAL CONDITIONS _____

ρp - Density of particles 2.5 g/cm^3

μ - Viscosity of flue gas 2.66×10^{-4} poise

MWs - Molecular wt. flue gas 29.64 g/g mole

ΔP_I - Pressure drop across impactor 19.25 in H_2O

Ps - Absolute stack pressure 29.47 in. Hg

Ts - Absolute stack temperature 980 °R

Qs - Actual flow rate at stack conditions 0.0767 ft^3/min

Vm - Dry gas volume _____ SCF

Mn - Total particulate mass _____ mgm

Cn - Total concentration _____ grains/SCF

I - Percent isokinetics _____ %

Vs - Gas velocity _____ ft/sec.

Dn - Nozzle diameter _____ in.

Stage Number	CYCLONE	1	2	3	4	5	FINAL FILTER
Dj - Jet Diameter, cm		0.2490	0.1775	0.1396	0.0946	0.0731	
Fj - Press. factor, n.d.		0.0210	0.0273	0.0395	0.0903	0.3277	
$D_{S,50}$ Stokes diameter, µm		2.77	1.57	1.02	0.48	0.27	
$D_{A,50}$ Aerodynamic diameter, µm		4.54	2.63	1.76	0.87	0.52	
$D_{AI,50}$ Aerodynamic impaction diameter, µm		4.82	2.90	2.02	1.13	0.761	
Mn - Particulate mass, mgm	2	8.4	10.5	4.0	1.6	0.9	1.2
% - Percent of Total	52.8	14.9	18.7	7.1	2.8	1.6	2.1
Cumulative percent	47.2	32.3	13.7	6.6	3.7	2.1	
Cn - Concentration, grains/SCF							
Cumulative concentration, grains/SCF							

#15900

KVB

BRINK CASCADE IMPACTOR DATA SHEET

TEST NO. 26 LOAD

TEST SITE Site B % O_2

TEST DATE 3/5/78 FUEL Hatfield

SAMPLE LOCATION Mech Out SPECIAL CONDITIONS

GAS VELOCITY DETERMINATION

PITOT TUBE ΔP 0.30 BAROMETRIC PRESS in. Hg, P_{bar} 29.87

GAS TEMP. °R, Ts 980 GAS STATIC PRESS in. H_2O -5.4 "H_2O

PITOT CORRECTION FACTOR, Cp 0.837 GAS STATIC PRESS in. Hg abs, Ps -29.47 "Hg

MOLECULAR WT. FLUE GAS, MW_s 29.4

$$Vs = 85.48\ Cp \left(\frac{Ts\ \Delta P}{Ps\ MWs}\right)^{1/2} = 41.67 \text{ ft/sec}$$

IMPACTOR FLOW RATE DETERMINATION

NOZZLE DIAMETER inches, Dn 0.075

NOZZLE AREA ft^2, An 3.0679×10^{-5} $An = \pi(Dn/24)^2$

$Qn = Vs\ An\ 60 = 0.0767$ ft^3/min at nozzle

$Qc = Qs \left(\frac{PsMWs}{1.3Ts}\right)^{1/2} = 0.0632$ ft^3/min corrected to calibration conditions

PRESSURE DROP ACROSS IMPACTOR FROM CALIBRATION CURVE 19.25 in. H_2O

OPERATING VACUUM (corrected for static pressure of duct) 24.65 in. H_2O

ISOKINETICS DETERMINATION

	SAMPLE TIME (θ)	METER READING (Vm)	METER TEMP (Tm)
INITIAL	10.0	0.394	84
FINAL	20.0	0.772	85
Δ	35'56"	1.500	85

$\%H_2O$ = 6.0 %

$$I = \frac{1.667\ Ts\ Vm\ P_{bar}}{\theta\ Tm\ Vs\ Ps\ An\left(1-\frac{\%H_2O}{100}\right)} = 105.7\ \%$$

#15900

KVB

BRINK CASCADE IMPACTOR LAB WORKSHEET

TEST No. 25 LOCATION site B

TEST DATE 3/3/78 ENGINEER

TEST DESCRIPTION

PRE TEST WEIGHTS (GRAMS)

PLATE NO.		CYCLONE	1	2	3	4	5	FINAL FILTER
DATE WT.		3/3/78						
TARE WT.	1	.4121	3.5104	3.0922	3.9812	3.7800	3.9016	.0469
	2		3.5108	3.0925	3.9811	3.7802	3.9019	.0470
	3							
	4							
AVERAGE		.4121	3.5106	3.0923	3.9811	3.7801	3.9017	.0469

POST TEST WEIGHTS (GRAMS)

DATE WT.		3/6/78						
GROSS WT.	1	.4264	3.5186	3.1023	3.9846	3.7827	3.9030	0.0470
	2		3.5185	3.1022	3.9845	3.7826	3.9028	0.0468
	3							
	4							
AVERAGE		.4264	3.5185	3.1022	3.9845	3.7827	3.9029	.0469

NET TEST RESULTS (MILLIGRAMS)

NET WT.	.0143	.0079	.0099	.0034	.0026	.0012	.0000
PERCENT							

TOTAL NET WEIGHT 39.3 mgm

#15900

PARTICULATE LAB WORKSHEET

TEST #6

TEST NO. SASS-~~PCT~~ TRAIN — SIZING + COMBUSTIBLES (Inlet, Outlet) LOCATION _____

Date 1-11-78 Box No. _____ Eng. _____

Test Description MULTICLONE OUT

Dry Gas Meter Vol (ft^3)
Final _____
Initial _____
Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.		10μ cyclone	3μ cyclone	1μ cyclone	—		
BEAKER NO.		CRUCIBLE # 11	CRUCIBLE # 7	CRUCIBLE # 2	—		
DATE WT.		1-13-78	1-13-78	1-13-78	1.2596		
TARE WT.	1	18.6144	18.5162	3.9724	1.2599		
	2	18.6143	18.5162	3.9723	—		
	3	18.6143	18.5163	3.9725	—		
	4	—	—	—	—		
AVG.		18.6143	18.5162	3.9724	1.2598		

POST TEST WTS.

	1	21.3271	19.5671	4.4416	1.4226	POST	310°C BAKE
	2	21.3272	19.5673	4.4417	1.4228		
	3	21.3274	19.5673	4.4417	~~1.4239~~		
	4	—	—	—	—		
AVG.		21.3273	19.5672	4.4417	1.4227		
Δ WT.		2.7129	1.0510	.4693	.1629		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn _____ mgm REMARKS: _____

19.6190 19.2091 4.3167
19.6192 12.2091 4.3170

8830-5 rev.

TEST #6
SIZING + COMBUSTIBLES
SASS TRAIN

PARTICULATE LAB WORKSHEET

TEST NO. 1-11-78 (Inlet, Outlet) LOCATION _____

Date _____ Box No. _____ Eng. _____

Test Description MULTICLONE OUT

Dry Gas Meter Vol (ft^3)
Final _____
Initial _____
Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		~~H_2O RINSE~~	ACETONE RINSE	~~DRY FLASK~~	FILTER NO.	~~BLANK NO.~~	
BOTTLE NO.		10μ cyclone	3μ cyclone	1μ cyclone	Filter NO.		
BEAKER NO.		17	18	9	19		
DATE WT.		1-13-78	1-13-78	1-10-78	1-13-78		
TARE WT.	1	64.1600	63.5527	49.6400	68.4652		
	2	64.1599	63.5522	49.6399	68.4652		
	3	64.1598	63.5519	49.6396	68.4653		
	4	—	—	—	—		
AVG.		64.1599	63.5523	49.6398	68.4652		
POST TEST WTS.							
	1	~~64.2556~~	~~63.6632~~	49.8288	68.4773		
	2	64.2540	63.6618	49.8281	68.4767		
	3	64.2535	63.6613	49.8277	68.4764		
	4	64.2536	63.6612	—	—		
AVG.		64.2537	~~62.6614~~	49.8282	68.4768		
Δ WT.		.0938	~~63.6624~~ .1091	.1884	.0116		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn _____ mgm REMARKS: _____

8830-5 rev.

SASS TEST - COMBUSTION ENGINEERING

5

LOCATION [redacted] B

UNIT 14 FUEL

OPERATORS R.A.P.

TEST NUMBER	#6
DATE	1-11-78
AMBIENT TEMPERATURE, °F	
METER VOL. (START/END)	29.750/

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Leak Check Rate

	Vac in. Hg	ft³/min
Before		
After		

$\frac{1.667(70.61)(30.20)(97.5)(5)}{(.94)(30)(2.5\times10^{-3})(5)}$ (333) (29.98)

Homograph Setup

P_{meter} = C =

P_{stack} = T_{stack} = 93.2

T_{meter} = ΔP =

$\Delta H_@$ = Nos (Ideal) =

% H_2O = Nos (Actual) =

▼ =

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1		−		=	
#2		−		=	
#3		−		=	
			Total		
#4 (Silica Gel)	g (End)	−	g (Start)	=	Δ grams
			Total Vol. H_2O		ml

Filter# ____

Particulate Wt:

Filter ____ mg

Acetone ____ mg

Total ____ mg

Sampling Time Per Point, Min.	Particulate Wt., mg	Condensate Vol., ml	Fuel Flow gal/hr	Load MW	C_{pitot}	Stack Press. In.Hg-Gauge	Barometric Pressure
					.85		

TEST RESULTS

Test Averages:

ΔP_s = ____ T_{stack} = ____ °F

ΔH = ____ T_{meter} = ____ °F

Sample Vol. = ____ ft³

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Out	Meter		O_2, %	Vac.
10.0		.19	3.7	56.40	513	383	399			77	74		7.2
20.0		.19	3.7	79.50	515	384	399			95	77		10.2
				105.36	515	384	399			100	82		
						75.61 ft³							
Average													

Percent O_2 = ____

$MW_{stack\ gas}$ = ____ (~28.

Velocity = ____ ft/sec

Total Sample Time = ____ min.

ISOKINETICS = ____ %

Particulate Emissions

____ lbs/10^6 BTU

COMMENTS:

15900

244

PARTICULATE LAB WORKSHEET

TEST NO. 7 (Inlet, Outlet) LOCATION S.te B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		10μ cyclone ~~H_2O RINSE~~	~~ACETONE RINSE~~ 3μ cyclone	~~BKT BLANK~~ 1μ cyclone	FILTER NO.	BLANK NO.	
BOTTLE NO.			—				
BEAKER NO.		CRUCIBLE # 1	CRUCIBLE # 3	CRUCIBLE # 4			
DATE WT.							
TARE WT.	1	3.6804	3.6681	3.7104	1.2574		
	2	3.6803	3.6681	3.7103	1.2574		
	3	3.6803	3.6681	3.7102	—		
	4	—	—	—	—		
AVG.		3.6803	3.6681	3.7103	1.2574		
POST TEST WTS.							
	1	3.7864	3.9320	3.8782	1.3738		
	2	3.7864	3.9319	3.8783	1.3739		
	3	3.7865	3.9321	3.8784	—		
	4	—	—	—	—		
AVG.		3.7864	3.9320	3.8783	1.3738		
Δ WT.		.1061	.2639	.1680	.1164		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn _____ mgm REMARKS: _____

post 150°C 3.7772 3.8622 3.8374
3.7772 3.8622 3.8375
3.7773 3.8623 3.8376

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 7 (Inlet, Outlet) LOCATION Site B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.		10μ cyclone	3μ cyclone	1μ cyclone	Filter		
BEAKER NO.		#20	#21	#22	#23		
DATE WT.		1-19-78	1-19-78	1-19-78	1-19-78		
TARE WT.	1	67.8396	49.6418	63.5525	50.3062		
	2	67.8397	49.6415	63.5524	50.3061		
	3	67.8392	49.6413	63.5522	50.3061		
	4	—	—	—	—		
AVG.		67.8395	49.6415	63.5524	50.3061		

POST TEST WTS.

	1	67.9299	49.7081	63.6304	50.3076		
	2	67.9297	49.7079	63.6302	50.3074		
	3	67.9296	49.7079	63.6301	50.3074		
	4	—	—	—	—		
AVG.		67.9297	49.7080	63.6302	50.3075		
Δ WT.		.0902	.0665	.0778	.0014		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn _____ mgm REMARKS: _____

8830-5 rev.

SASS- SIZING + COMBUSTIBLES

LOCATION B

FUEL

OPERATORS

TEST NUMBER	7
DATE	1-12-78
AMBIENT TEMPERATURE, °F	
METER VOL. (START/END)	110.471

Page ____ Of ____

Leak Check Rate

	Vac in. Hg	ft^3/min
Before		
After		

Nomograph Setup

T_{stack} = C =

T_{meter} = T_{stack} =

$\Delta H_@$ = ΔP =

% H_2O = Noz (Ideal) =

Noz (Actual) =

▼ =

Imp.	Vol. (End)	Vol. (Start)	ΔVol. (ml)
#1			
#2			
#3			
		Total	
#4 (Silica Gel)	g (End)	g (Start)	Δ grams
		Total Vol. H_2O	ml

Filter# ____

Particulate Wt:

Filter ____ mg

Acetone ____ mg

Total ____ mg

Sampling Time Per Point, Min.	Particulate Wt., mg	Condensate Vol., ml	Fuel Flow gal/hr	Load MW	C_{pitot}	Stack Press. In.Hg-Gauge	Barometric Pressure

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter		O_2,%	Vac.
10'		.19	3.7	136.70	525	385	402			95	83		13.0
15				149.09									
Average													

TEST RESULTS

Test Averages:

ΔP_s = ____ T_{stack} = ____ °F

ΔH = ____ T_{meter} = ____ °F

Sample Vol. = ____ ft^3

Percent O_2 = ____

$MW_{stack\ gas}$ = ____ (~28.

Velocity = ____ ft/sec

Total Sample Time = ____ min.

ISOKINETICS = ____ %

Particulate Emissions

____ lbs/10^6 BTU

COMMENTS:

15900

247

ABMA Test Site B
Test 15

To: David Smith
From: Beth Hefferman
[redacted] NO_x

Date 2/21/78
C.C. H. Mason
L. Waterland
B. Higginbotham
J. Steiner

Test #15 Gravimetrics Test Site B
Day 1 - 2/6/78 Inlet NO_x

Sample Identification	Weight* (g)
Inlet Filters + wash	2.06033
" 1μ Flyash + wash	3.65009
" 3μ Flyash + wash	14.61579
" 10μ Flyash + 10μ wash + Probe and Nozzle Wash	82.57892
Outlet Filters + wash	0.11013
" 1μ Flyash + wash	0.00125
" 3μ Flyash + wash	0.00230
" 10μ Flyash + wash + Probe and Nozzle Wash	0.01433
Bottom Ash	574.80
Mechanical Hopper Ash	699.95
Electrostatic Precipitator Wash	166.20

*Weights are corrected for blank values and include washes.

To: David Smith
From: Beth Heffernan
[redacted] NO_x
TEST SITE B TEST # 16
Gravimetric

ABMA Test Site B
Test 15

Date 2/21/78
C.C.

Day 2 - 2/7/78 Baseline

Sample Identification	Weight* (g)
Inlet Filter ash + wash	① 2.19866
" 1μ Flyash + Wash	13.06136
" 3μ Flyash + Wash	36.71829
" 10μ Flyash + Wash +	222.14307
" Probe & Nozzle Wash	
Outlet Filter ash + Wash	② 0.10692
" 3μ Flyash + Wash	0.01089
" Probe & Nozzle Wash	0.00776
Mechanical Hopper Ash	1110.65
Electrostatic Precipitator Ash	916.15
③ Bottom Ash	—

* Weights are corrected for blank values and include washes.
① one of five inlet filters was slightly torn - value may be low.
② outlet filter (1 of 1) was slightly torn - value (g) may be low.
③ No bottom ash taken this day.

PARTICULATE LAB WORKSHEET

TEST NO. 24 BLR-OUT (Inlet, Outlet) LOCATION SITE B - [redacted]

Date 3-2-78 Box No. _____ Eng. _____

Test Description SASS (SIZING)

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.		1s-10μ	2s-3μ	3s-1μ	—		
BEAKER NO.		—	—	—	#1s		
DATE WT.		3-4-78	3-4-78	3-4-78	3-4-78		
TARE WT.	1	4.9207	4.9606	5.0371	1.2549		
	2	4.9206	4.9608	5.0374	1.2550		
	3	—	—	—	—		
	4	—	—	—	—		
AVG.		4.9206	4.9607	5.0373	1.2550		
POST TEST WTS.							
	1	12.7334	6.5850	5.4706	1.4104		
	2	12.7334	6.5853	5.4707	1.4106		
	3	—	—	—	—		
	4	—	—	—	—		
AVG.		12.7334	6.5851	5.4706	1.4105		
Δ WT.		7.8128	1.6244	.4333	.1555		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn _____ mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 24 - BLR OUT (Inlet, Outlet) LOCATION SITE B

Date _____ Box No. _____ Eng. _____

Test Description (GASS) Sizing

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		[redacted]	[redacted]	[redacted]	FILTER NO.	BLANK NO.	
BOTTLE NO.		10M WASH	3M WASH	1M WASH			
BEAKER NO.		85	86	87			
DATE WT.		3-6-78	3-6-78	3-4-78			
TARE WT.	1	50.1588	50.3275	49.6415			
	2	50.1590	50.3276	49.6413			
	3	50.1591	50.3276	49.6412			
	4	—	—	—			
AVG.		50.1590	50.3276	49.6413			
POST TEST WTS.							
	1	50.3737	50.3869	49.7013			
	2	50.3741	50.3866	49.7010			
	3	50.3739	50.3871	49.7011			
	4	—	—	—			
AVG.		50.3739	50.3869	49.7011			
Δ WT.		.2149	.0593	.0598			

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn _____ mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

(1.667)(83.007)(28.1[illegible])
(29.86)(10)(.94)(2.58×10⁻³)(560)(28.84)

(85.48)(
28.84

LOCATION B 100.3
UNIT 14 FUEL
OPERATORS

TEST NUMBER	24 Burst
DATE	
AMBIENT TEMPERATURE, °F	
METER VOL. (START/END)	149.425 /

Page ____ Of ____

Leak Check Rate

	Vac in. Hg	ft³/min
Before	.562	
After	.688	

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
$\Delta H_@$ = Nos (Ideal) =
% H_2O = Nos (Actual) =
▼ =

Imp.	Vol. (End)		Vol. (Start)		ΔVol. (ml)
#1		−		=	
#2		−		=	
#3		−		=	
			Total		
#4 (Silica Gel)	g (End)	−	g (Start)	=	Δ grams
			Total Vol. H_2O		ml

Filter# ____

Particulate Wt:
Filter ____ mg
Acetone ____ mg
Total ____ mg

Sampling Time Per Point, Min.	Particulate Wt., mg	Condensate Vol., ml	Fuel Flow gal/hr	Load MW	C_{pitot}	Stack Press. In. Hg-Gauge	Barometric Pressure
							29.97

TEST RESULTS

Test Averages:
ΔP_s = ____ T_{stack} = ____ °F
ΔH = ____ T_{meter} = ____ °F
Sample Vol. = 83.007 ft³

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter	O_2, %	Vac.
7.3 min					540	400	402			101.99		
10				173.2								
35 min				232.432	550							

(1.667)(83.007)(1000)(29.97)
%I = (29.86)(35)(.94)(2.58×10⁻³)(560)(28.84)
%I = 101.1

Average

Percent O_2 = ____
$MW_{stack\ gas}$ = ____ (~28.
Velocity = ____ ft/sec
Total Sample Time = ____ min.
ISOKINETICS = ____ %

Particulate Emissions
____ lbs/10⁶ BTU

COMMENTS:

15900

PARTICULATE LAB WORKSHEET

TEST NO. 25. BLR-OUT (Inlet, Outlet) LOCATION SITE B - [redacted]

Date 3-3-78 Box No. _____ Eng. _____

Test Description SASS - SIZING

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.		4s-10M	5s-3A	6s-1A	—		
BEAKER NO.		—	—	—	2s		
DATE WT.		3-4-78	3-4-78	3-4-78	3-3-78		
TARE WT.	1	4.9567	4.9204	4.9486	1.2687		
	2	4.9567	4.9208	4.9487	1.2688		
	3	—	—	—	—		
	4	—	—	—	—		
AVG.		4.9567	4.9206	4.9487	1.2687		
POST TEST WTS.							
	1	7.8407	6.1500	5.1586	1.3946		
	2	7.8411	6.1501	5.1590	1.3952		
	3	7.8412	6.1502	5.1590	—		
	4	—	—	—	—		
AVG.		7.8410	6.1501	5.1589	1.3949		
Δ WT.		2.8843	1.2295	.2102	.1262		

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn _____ mgm REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 25 BLR-OUT (Inlet, Outlet) LOCATION SITE B- [redacted]

Date 3-3-78 Box No. _____ Eng. _____

Test Description SASS - SIZING

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.		10μ WASH	3μ WASH	1μ WASH			
BEAKER NO.		83	84	92			
DATE WT.		3-4-78	3-4-78	3-6-78			
TARE WT.	1	69.0075	69.5620	50.2978			
	2	69.0073	69.5617	50.2979			
	3	69.0072	69.5616	50.2977			
	4	—	—	—			
AVG.		69.0073	69.5618	50.2978			
POST TEST WTS.							
	1	69.2027	69.6987	50.5297			
	2	69.2026	69.6987	50.5298			
	3	69.2029	69.6985	50.5301			
	4	—	—	—			
AVG.		69.2027	69.6986	50.5299			
Δ WT.		.1954	.1368	.2321			

Δ Vlc = _____ ml LOAD _____ klb/hr

Δ DgV = _____ ft^3 O_2 _____ %

Δ Mn _____ mgm REMARKS: _____

8830-5 rev.

$Q_{cy} = (281.4)(29.56)\frac{(.688)^2}{1020} = 3.86\ ft^3/cycles$ $\quad Q_m = (3.86)\left(\frac{365}{860}\right)\left(1 - \left(\frac{6}{100}\right)\right) = 2.38\ cfm$

LOCATION B
UNIT 3/3178 FUEL Kentucky Cumberland
OPERATORS JC
Particle sizing

TEST NUMBER	25 Hrant
DATE	
AMBIENT TEMPERATURE, °F	
METER VOL. (START/END)	233.705/318.523

Page ____ Of ____

Leak Check Rate

	Vac in. Hg	ft³/min
Before	Δ_u = .688	
After		

ΔH = ~~[illegible]~~ for B → 3.0

Nomograph Setup

P_{meter} = C =
P_{stack} = T_{stack} =
T_{meter} = ΔP =
$\Delta H_@$ = Noz (Ideal) =
% H_2O = Noz (Actual) =
▼ =

Imp.	Vol. (End)		Vol. (Start)		Δvol. (ml)
#1		−	308	=	
#2		−		=	
#3		−		=	
			Total		
#4 (Silica Gel)	g (End)	−	g (Start)	=	Δ grams
			Total Vol. H_2O		ml

Filter# ____

Particulate Wtr

Filter ____ mg
Acetone ____ mg
Total ____ mg

Sampling Time Per Point, Min.	Particulate Wt., mg	Condensate Vol., ml	Fuel Flow gal/hr	Load MW	C_{pitot}	Stack Press. In.Hg-Gauge	Barometric Pressure
						29.34	29.45

TEST RESULTS

Test Averages:
ΔP_s = ____ T_{stack} = ____ °F
ΔH = ____ T_{meter} = ____ °F
Sample Vol. = 84.818 Ft³

Sample Point	Time	METER CONDITIONS ΔP_s	ΔH	Meter Reading	TEMPERATURES, °F Stack	Probe	Oven	Impingers In	Impingers Out	Meter In	Meter Out	O_2, %	Vac.
	5 min			246.50	550	389	401			108	101		
	10 min			258.6	540	391	400			110	105		
	15			270.5	540	390	402			113	107		
	20			282.4	540	390	402			120	108		
	25			294.5	535	388	401			122	109		
	30			306.5	540	390	402			125	111		
	35			318.523	540	388	401			126	112		
Average													

$(1.667)(84.818)(1.000)(29.45)$
$\%I = (29.36)(8.6\times10^{-3})(945)(577)(35)(29.34)$
$\%I = 97.3$

Percent O_2 = ____
$MW_{stack\ gas}$ = ____ (~28)
Velocity = ____ ft/sec
Total Sample Time = ____ min.
ISOKINETICS = ____ %

Particulate Emissions

____ lbs/10⁶ BTU

COMMENTS:

15900

112

PARTICULATE LAB WORKSHEET

TEST NO. 26 (Inlet, Outlet) LOCATION SITE B

Date _____ Box No. _____ Eng. _____

Test Description _____

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.		10M ASH	3M cyclo-hexane	cyclo-hexane	—		
BEAKER NO.		9s	8s	7s	1.2579		
DATE WT.		—	—	—	1.2582		
TARE WT.	1	5.0511	5.0488	4.9739	—		
	2	5.0511	5.0487	4.9739	—		
	3	—	—	—	—		
	4	—	—	—	—		
AVG.		5.0511	5.0487	4.9739	1.2581		
POST TEST WTS.							
	1	11.4114	6.7772	5.3475	1.4167		
	2	11.4115	6.7778	5.3476	1.4168		
	3	—	—	—	—		
	4	—	—	—	—		
AVG.		11.4115	6.7775	5.3476	1.4168		
Δ WT.		6.3604	1.7288	.3737	.1587		

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn _____ mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

PARTICULATE LAB WORKSHEET

TEST NO. 26 (Inlet, Outlet) LOCATION SITE B- [redacted]

Date _____ Box No. _____ Eng. _____

Test Description .5455 SIZING

Dry Gas Meter Vol (ft^3)

Final _____

Initial _____

Δ DgV _____

Impinger Water Vol (ml)

	1	2	3	Total
Final				
Initial				
Δ Vlc				

CONTENT		H_2O RINSE	ACETONE RINSE	DRY FLASK	FILTER NO.	BLANK NO.	
BOTTLE NO.		10M-WASH	3M-WASH	1M-WASH			
BEAKER NO.		93	94	95			
DATE WT.		3-6-78	3-6-78	3-6-78			
TARE WT.	1	63.5525	67.8396	64.5831			
	2	63.5523	67.8396	64.5828			
	3	63.5522	67.8396	64.5827			
	4	—	—	—			
AVG.		63.5523	67.8396	64.5829			
POST TEST WTS.							
	1	63.6759	68.0706	64.9174			
	2	63.6760	68.0713	64.9169			
	3	63.6766	68.0716	64.9176			
	4	—	—	—			
AVG.		63.6762	68.0712	64.9173			
Δ WT.		.1239	.2316	.3344			

Δ Vlc = _____ ml

Δ DgV = _____ ft^3

Δ Mn _____ mgm

LOAD _____ klb/hr

O_2 _____ %

REMARKS: _____

8830-5 rev.

Particulate Sizing Using SASS Cyclones At BLR [illegible]

KVB, Inc. Trace Specil and Organics Sampling Data

Project: _____ Personnel: JEC. Barometric Press: 29.87

Date: Mar. 5, 1978

Location: B

Unit: 14 Probe Nozzle Diameter (inches): _____ (Dn)

Test: #26 Absolute Static Press. in Stack (in. Hg): _____ (Ps)

Fuel: Hatfield Coal Pitot Tube Coefficient: .85 (Cp)

TIME Real	TIME Elapsed	Traverse Point Depth	Pitot ΔP (in H_2O)	Orifice ΔP (in H_2O)	Cum. Meter Volume (ft^3)	Pump Suction (in. Hg)	TEMPERATURE (°F) Stack	Probe	XAD-2	Impinger Out	Oven	Meter In	Meter Out	O_2 Conc. % dry
3:35	0		.17	3.1"	318.[illegible]		540	391			402	101	100	
	5				330.5		538	394			402	103	100	
	10				342.5	7"	543	398			402	109	102	
	15				354.5	7"	545	400			402	113	103	
	20				366.45	7	541	400			402	116	104	
	25				378.45	7½"	543	400			402	119	105	
	30				390.5	7½"	546	400			402	121	107	
4:10	35				402.541									

$$\left(\frac{(1000)(.17)}{(29.4)(29.74)}\right)^{1/2} = 32.06$$

$$\frac{(1.667)(83.971)(1000)(29.87)}{(2.581\times10^{-3})(567)(32.0[illegible])(.95[illegible])(35)(29.7[illegible])}$$

I = 91.9%

(107)

258

TEST # 30.

ABMA Test Site B

LPE - Container - Pretest

	#1	#2	#3	#4	#5	#6
	23.8545	23.7534	23.5514	23.6969	23.3844	23.4523
	23.8543	23.7528	23.5506	23.6964	23.3842	23.4520
	23.8543	23.7527	23.5505	23.6963	23.3842	23.4520
Avg.	23.8543	23.7530	23.5508	23.6965	23.3843	23.4521

LPE post TEST - container + solids

	#1 - 10μ cyclone	#2 - 10μ cyclone	#3 - 10μ cyclone	#4 - 10μ cyclone	#5 - 3μ cyclone	#6 - 1μ cyclone
	52.6002	58.2750	73.0638	67.7468	38.2983	26.6218
	52.6004	58.2751	73.0645	67.7475	38.2986	26.6226
	52.5995	58.2742	73.0639	67.7471	38.2983	26.6227
	52.5994	58.2748	73.0641	67.7471	38.2984	26.6224
ΔW -	28.7451	34.5218	49.5133	44.0506	14.9141	3.1703

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10μ cyclone + PROBE - TOTAL SOLIDS - 156.8308
3μ cyclone _____ 14.9141
1μ cyclone _____ 3.1703
Filters _____ 2.3513

Filters -	B-2	B-3	B-5	B-6	B-7
	1.2509	1.2500	1.2643	1.2638	1.2534
	1.2509	1.2499	1.2644	1.2635	1.2530
	1.2510	1.2499	1.2646	1.2635	1.2530
	1.2509	1.2499	1.2644	1.2636	1.2531
	1.7361	1.8695	1.6303	1.6179	1.7788
	1.7362	1.8694	1.6304	1.6180	1.7790
	1.7364	1.8697	1.6306	1.6183	1.7791
	1.7362	1.8695	1.6304	1.6181	1.7790
	.4853	.6196	.3660	.3545	.5259

Impinger #1 soln - 817 ml
IPA - 55
H_2O - 60

Impinger #2 sol'n - 765
IPA - 103
H_2O - 127

Impinger #3 sol'n - 765
IPA - 55
H_2O - 57

TEST #31

ABMA Test Site B

LPE CONTAINER - PRETEST

	#1	#2	#3	#4	#5	#6
	23.5059	23.6882	23.2349	23.8868	23.6617	23.2559
	23.5058	23.6879	23.2350	23.8866	23.6615	23.5560
	23.5059	23.6878	23.2349	23.8869	23.6615	23.5560
Avg	23.5059	23.6880	23.2349	23.8868	23.6616	23.5560
	#1-10μ	#2-10μ	#3-10μ	#4-10μ	#5-3μ	#6-1μ
	63.3617	67.4014	62.8771	62.9370	40.3121	27.1283
	63.3617	67.4012	62.8769	62.9372	40.3123	27.1285
	63.3619	67.4011	62.8768	62.9377	40.3122	27.1285
	63.3618	67.4012	62.8769	62.9373	40.3122	27.1284
ΔW -	39.8559	43.7132	39.6420	39.0505	16.6506	3.5724

10μ cyclone + PROBE solids (Total) — 162.2616
3μ cyclone — 16.6506
1μ cyclone — 3.5724
Filters — 1.4703

Filters - PRETEST

#9	#10	#11
1.2585	1.2620	1.2633
1.2584	1.2621	1.2634
1.2585	1.2622	1.2634
1.2585	1.2621	1.2634
POST TEST		
1.9641	1.9329	1.3568
1.9642	1.9330	1.3570
1.9645	1.9331	1.3571
1.9643	1.9330	1.3570

.7058 .6709 .0936

Impinger #1 sol'n - 825 ml
IPA wash - ~~35 ml~~ 49 ml
H_2O wash - 70 ml

Impinger #2 sol'n - 770 ml
IPA wash - 140 ml
H_2O wash - 145 ml

Impinger #3 sol'n - 791 ml
IPA wash - 55 ml
H_2O wash - 50 ml

TEST #38

ABMA Test Site B

LPE CONTAINER – PRETEST

	#1	#2	#3	#6	#7	#4
	23.2336	23.4991	23.8860	23.5535	23.3185	23.7057
	23.2334	23.4991	23.8864	23.5533	23.3180	23.7058
	23.2339	23.4992	23.8863	23.5536	23.3181	23.7059
Avg.	23.2338	23.4991	23.8862	23.5535	23.3182	23.7058

#1-10μ	#2-10μ	#3-10μ	#6-10μ	#7-3μ	#4-1μ
68.8996	53.4666	56.9166	63.4131	40.5201	29.8022
68.8995	53.4662	56.9162	63.4127	40.5197	29.8027
68.8994	53.4661	56.9163	63.4126	40.5196	29.8025
68.8995	53.4663	56.9164	63.4128	40.5198	29.8025
Δw – 45.6657	29.9672	33.0302	39.8593	17.2016	6.0967

10μ cyclone + PROBE solids (Totals) — 48.5224
3μ cyclone — 17.2016
1μ cyclone — 6.0967
Filters — 2.2542

Filters #1		#12		#13		BLANK
1.2545		1.2507		1.2642		1.2614
1.2543		1.2507		1.2642	.8142	1.2613
1.2544		1.2508	.9272	1.2643		1.2612
1.2544	.5123	1.2507		1.2642		1.2613
1.7666		2.1784		2.0782		
1.7668		2.1785		2.0785		
1.7667		2.1784		2.0784		

Impinger #1 sol'n – 830 ml
IPA wash – 53 ml
H_2O wash – 39 ml

Impinger #2 sol'n – 753 ml
IPA – 56 ml
H_2O – 121 ml

Impinger #3 sol'n – 753 ml
IPA – 52 ml
H_2O – 125 ml

KVB Company
ES-0596
5364-01
July 31, 1978

Sample No.	K-22483	K-22484	K-22485
Sample Description	Fly Ash Site B Test 4	Fly Ash Site B Test 23	Fly Ash Site B Test 24
Bahco Particle Size Determination			
% Through #100 (149 Microns)	51.8	27.3	28.3

Results: Terminal Velocity	Diameter (Microns)	% Smaller	Diameter (Microns)	% Smaller	Diameter (Microns)	% Smaller
112.	27.	29.5	27.	18.6	27.	14.9
79.0	22.	26.0	22.	16.9	23.	13.1
31.0	14.	17.9	14.	11.8	14.	8.8
12.3	8.8	10.3	8.8	7.0	9.0	5.1
4.15	5.1	5.7	5.1	3.5	5.2	2.7
0.96	2.5	2.6	2.4	1.3	2.5	1.2
0.35	1.5	0.9	1.5	0.6	1.5	0.6

Density, gms/cc (On #100 Mesh Material Only)	2.20	2.21	2.12

Screen Sizing			
% Through #10	99.9	99.7	99.8
#16	98.5	94.8	95.8
#30	86.7	54.9	60.9
#50	69.0	35.8	39.1
#100	51.8	27.3	28.3
#200	32.8	20.3	18.6
#325	29.6	18.3	17.5

KVB Company
ES-0596
5364-01
July 31, 1978

Sample No.	K-22486	K-22487
Sample Description	Fly Ash Site B Test 25	Fly Ash Site B Test 26
Bahco Particle Size Determination		
% Through #100 (149 Microns)	33.8	37.2

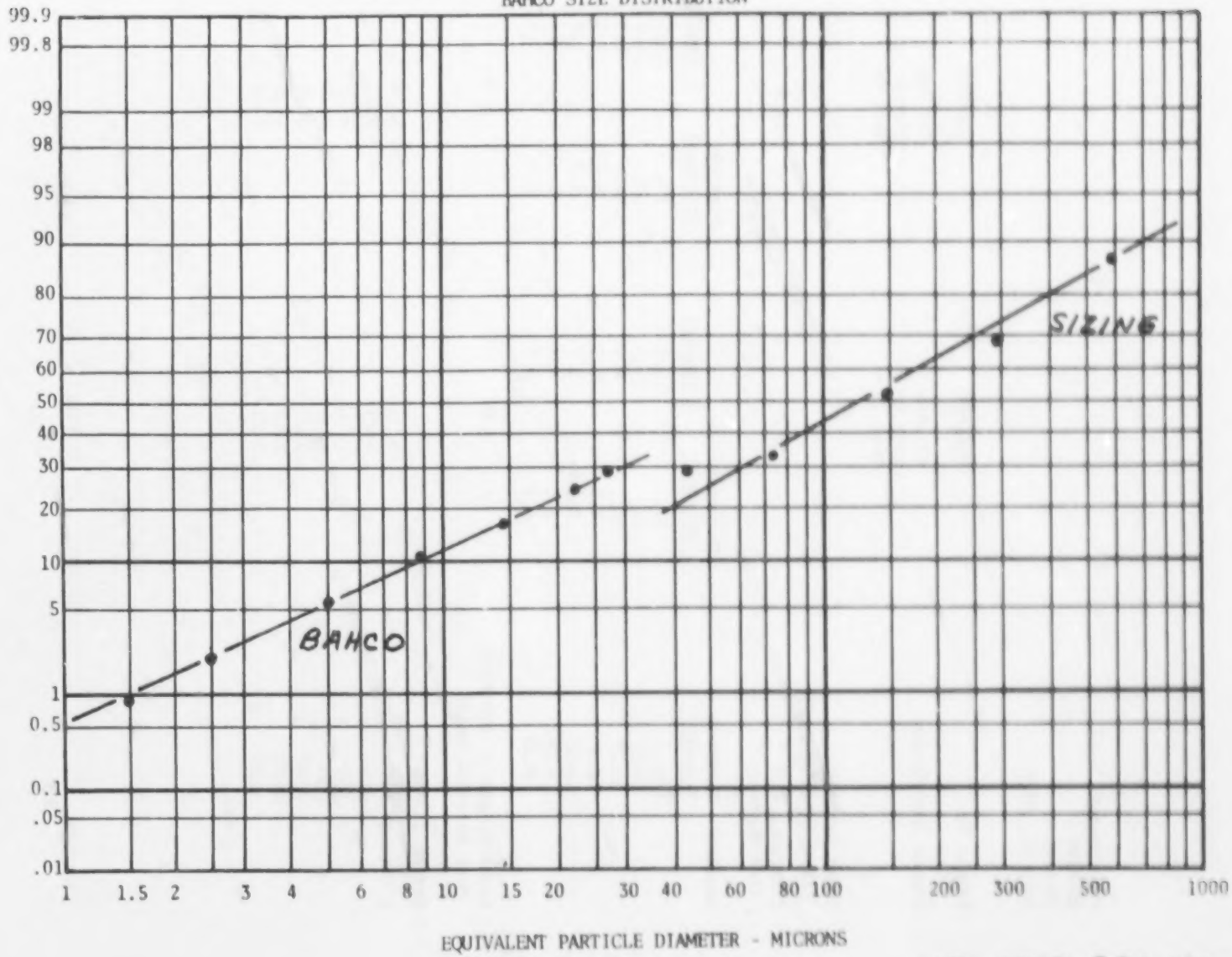
Results: Terminal Velocity	Diameter (Microns)	% Smaller	Diameter (Microns)	% Smaller
112.	27.	16.5	27.	17.2
79.0	23.	14.3	23.	15.0
31.0	14.	9.0	14.	9.8
12.3	8.9	5.1	8.9	5.5
4.15	5.2	2.7	5.2	2.8
0.96	2.5	1.1	2.5	1.2
0.35	1.5	0.5	1.5	0.5

Density, gms/cc (On #100 Mesh Material Only)	2.16	2.14
Screen Sizing		
% Through #10	99.9	99.7
#16	96.8	97.2
#30	66.3	70.9
#50	45.5	49.8
#100	33.8	37.2
#200	22.2	24.0
#325	21.5	23.4

SAMPLE IDENTIFICATION KVB COMPANY
FlyAsh SAMPLE, SITE B, TEST 4

SAMPLE NO. K-22483
CHARGE NO. 5364-01

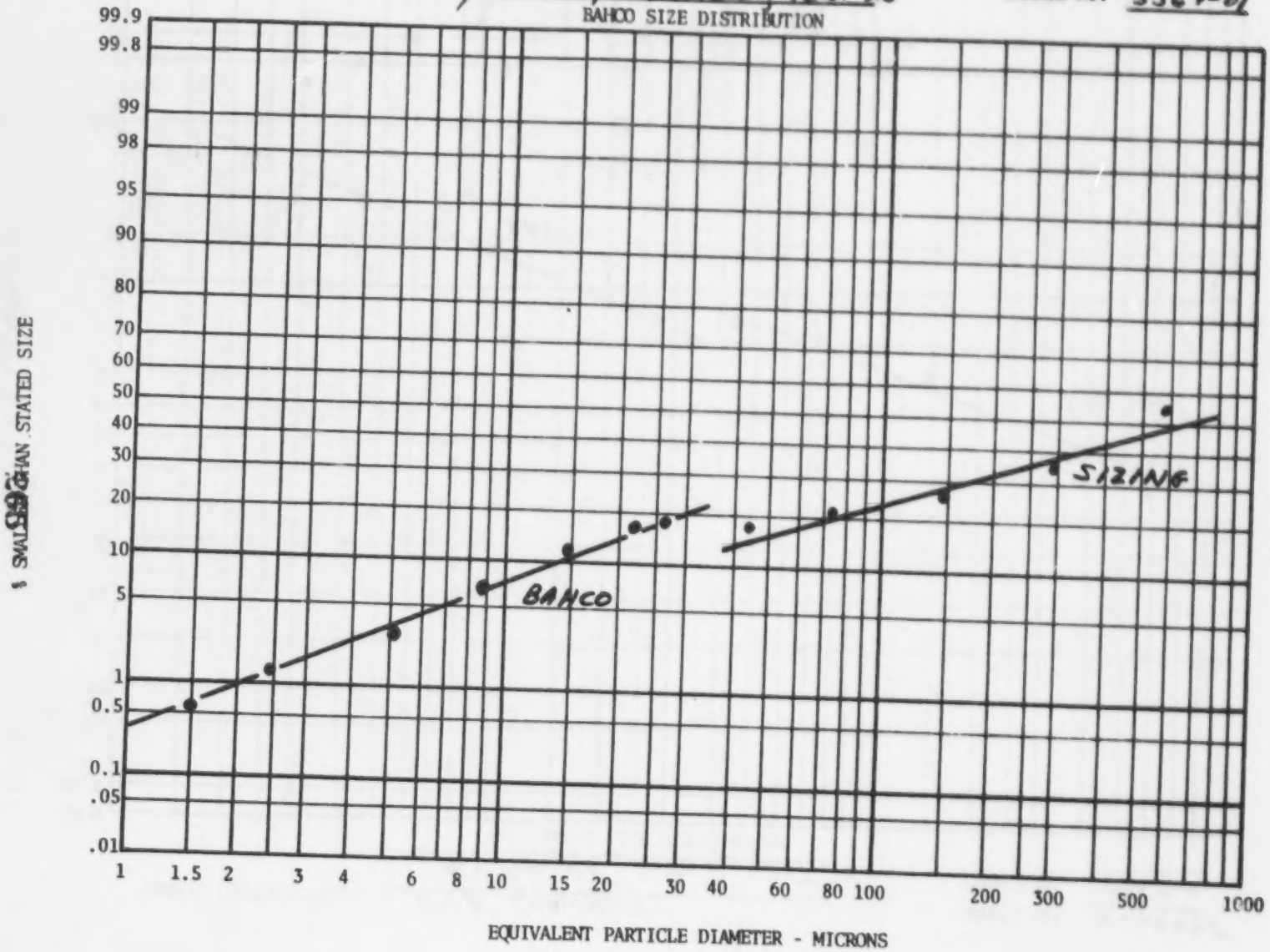
BAHCO SIZE DISTRIBUTION



-100m DENSITY 2.20 g/cc

SAMPLE IDENTIFICATION KVB COMPANY
Fly Ash Sample, Site B, Test 23

SAMPLE NO. K-22484
CHARGE NO. 5364-01

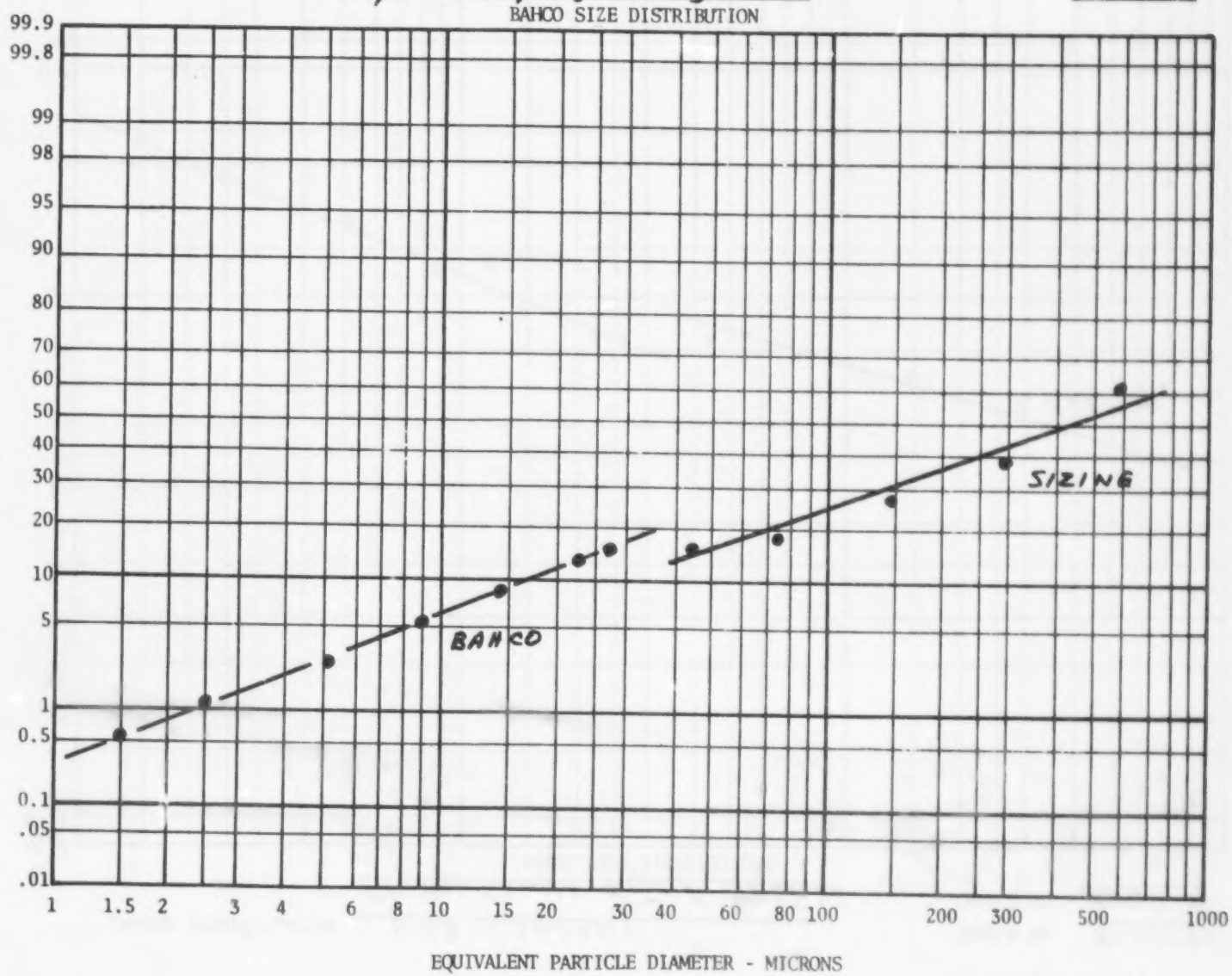


-100 mesh DENSITY 2.21 g/cc

SAMPLE IDENTIFICATION KVB COMPANY
Fly Ash Sample, Site B, Test 24

SAMPLE NO. K-22485
CHARGE NO. 5364-01

BAHCO SIZE DISTRIBUTION



-100m DENSITY 2.12 g/cc

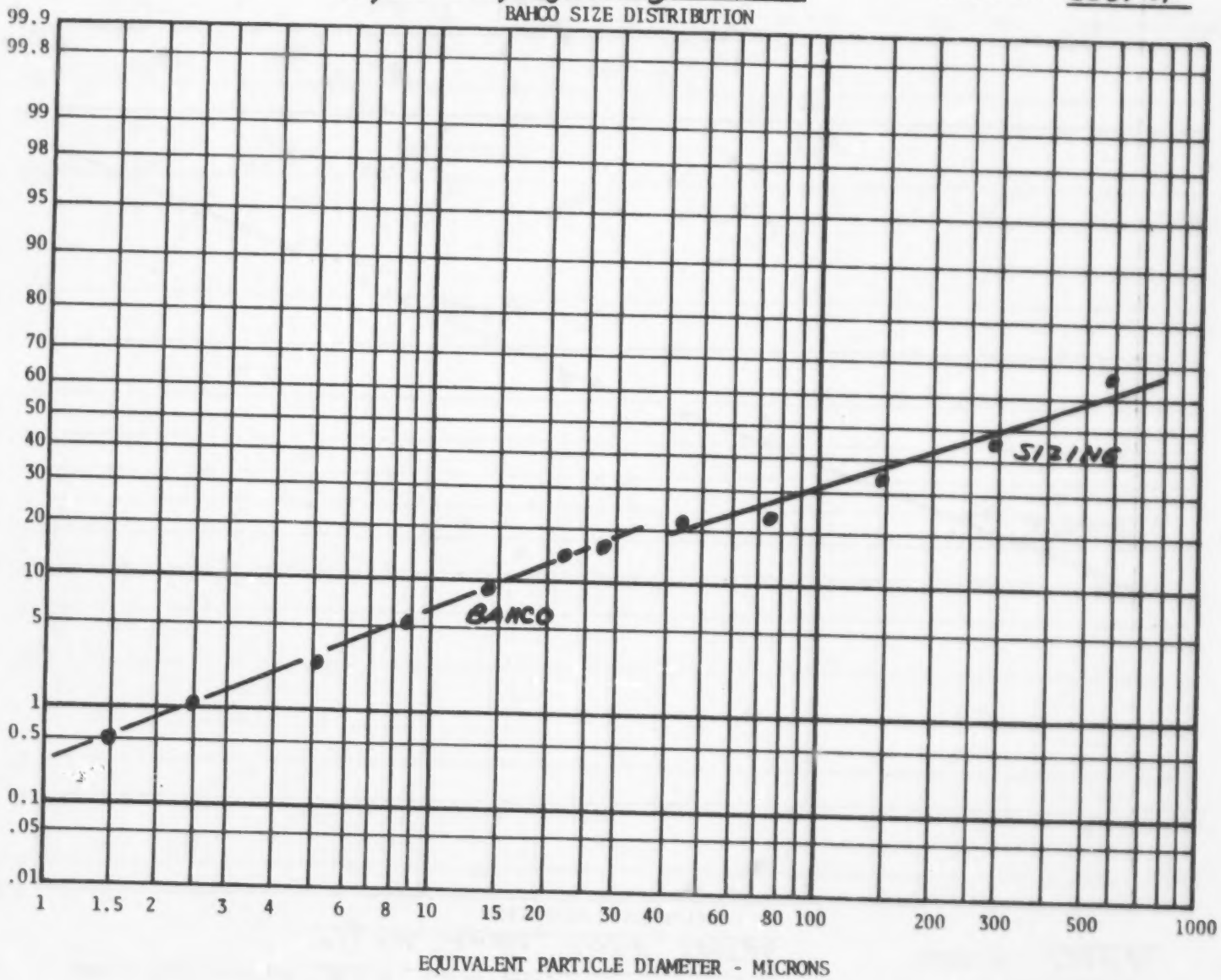
SAMPLE IDENTIFICATION KVB COMPANY

Fly Ash Sample, SITE B, TEST 25

SAMPLE NO. K-22486

CHARGE NO. 5364-01

BAHCO SIZE DISTRIBUTION

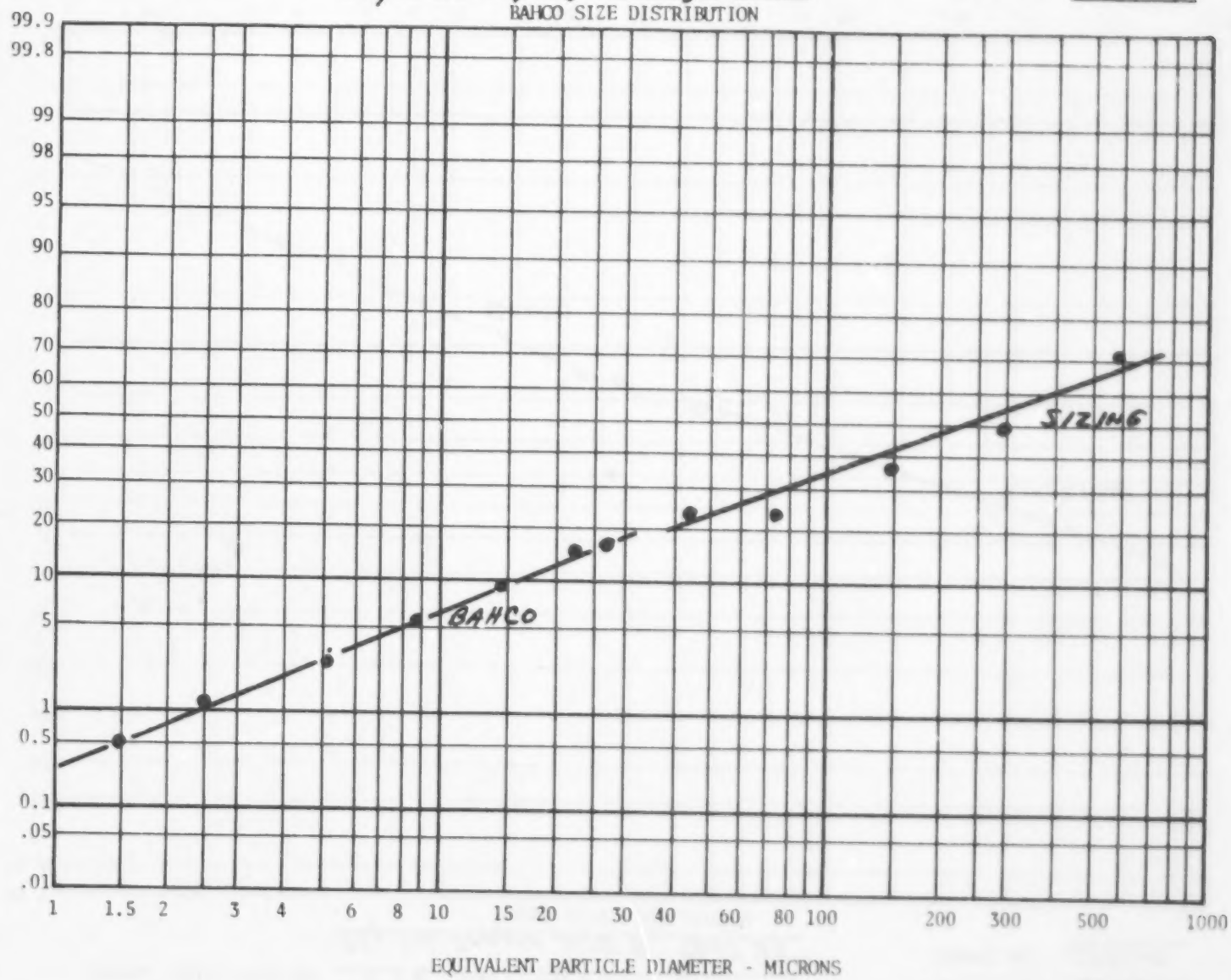


-100μm DENSITY 2.16 g/cc

SAMPLE IDENTIFICATION KVB COMPANY
Fly Ash Sample, SITE B, TEST 26

SAMPLE NO. K-22487
CHARGE NO. 5364-01

BAHCO SIZE DISTRIBUTION



-100m DENSITY 2.14 g/cc

SECTION 5.0

FUEL AND ASH ANALYSIS

		PAGE
5.1	COMMERCIAL TESTING ANALYSIS	270
5.2	COMBUSTIBLES ANALYSIS	310
5.3	COAL SIEVE ANALYSIS	316

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 233 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16120 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 24, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by
KVB, Inc.

Kind of sample reported to us: Coal

Site B

Test 1

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12749

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	2.99	xxxxx
% Ash	7.58	7.81
% Volatile	34.82	35.89
% Fixed Carbon	54.61	56.30
	100.00	100.00
Btu	13426	13840
% Sulfur	0.80	0.82

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx	xxx
Softening (H=W)	xxx	xxx
Softening (H=½W)	xxx	xxx
Fluid	xxx	xxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser

R. A. HOUSER, Manager Midwest Division

RAH:ljd

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 208 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-11

March 24, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by
KVB, Inc.

Kind of sample reported to us: Coal

Test 2, Site B

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12750

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	3.45	xxxxx
% Ash	7.15	7.41
% Volatile	34.94	36.19
% Fixed Carbon	54.46	56.40
	100.00	100.00
Btu	13367	13845
% Sulfur	0.91	0.94

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx	xxx
Softening (H=W)	xxx	xxx
Softening (H=½W)	xxx	xxx
Fluid	xxx	xxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:ljd

Charter Member

CHICAGO, ILLINOIS • CHARLESTON, W.VA. • CLARKSBURG, W.VA. • CLEVELAND, OHIO • NORFOLK, VA. • HENDERSON, KY. • TOLEDO, OHIO • DENVER, COLORADO • BIRMINGHAM, ALABAMA • VANCOUVER, B.C.

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 29, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by KVB, Inc.

Kind of sample reported to us ----- Test 3, Site B, Coal

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. 71-12751

PROXIMATE ANALYSIS	As Rec'd	Dry
% Moisture	1.90	xxxxx
% Ash	11.38	11.60
% Volatile	34.44	35.11
% F. Carbon	52.28	53.29
	100.00	100.00
Btu	12960	13211
% Sulfur	0.98	1.00
ULTIMATE ANALYSIS		
% Moisture	1.90	xxxxx
% Carbon	72.15	73.55
% Hydrogen	4.97	5.07
% Nitrogen	1.48	1.51
% Chlorine	0.08	0.08
% Sulfur	0.98	1.00
% Ash	11.38	11.60
% Oxygen(diff.)	7.06	7.19
	100.00	100.00

FUSION TEMPERATURE OF ASH	Reducing
Initial Def.	2400°F
Soft. (H=W)	2700+°F
Soft. (H=1/2W)	2700+°F
Fluid	2700+°F

MINERAL ANALYSIS	% Weight, Ignited
Silica, SiO_2	53.99
Alumina, Al_2O_3	27.85
Titania, TiO_2	1.21
Ferric Oxide, Fe_2O_3	8.26
Lime, CaO	1.85
Magnesia, MgO	1.32
Potassium Oxide, K_2O	2.20
Sodium Oxide, Na_2O	0.42
Sulfur Trioxide, SO_3	1.18
Phos. Pentoxide, P_2O_5	0.40
Undetermined	1.32
	100.00

Alk. as Na_2O, Dry Coal=0.22
SILICA VALUE = 82.53
Base/Acid = 0.17
T_{250} Poises: 2800°F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

Charter Member

CHICAGO, IL • BILLINGS, MT • BIRMINGHAM, AL • CHARLESTON, WV • CLARKSBURG, WV • CLEVELAND, OH • DENVER, CO • GOLDEN, CO • HENDERSON, KY • MIDDLESBORO, KY • MOBILE, AL • NEW ORLEANS, LA • NORFOLK, VA • PADUCAH, KY • VANCOUVER, B.C. CAN.

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO
18130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 24, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by
KVB, Inc.

Kind of sample reported to us: Coal

Test 4, Site B

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12752

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	1.60	XXXXX
% Ash	8.85	8.99
% Volatile	34.92	35.49
% Fixed Carbon	54.63	55.52
	100.00	100.00
Btu	13485	13704
% Sulfur	0.84	0.85

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	XXX	XXX
Softening (H=W)	XXX	XXX
Softening (H=½W)	XXX	XXX
Fluid	XXX	XXX

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser

R. A. HOUSER, Manager, Midwest Division

RAH:ljd

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 336 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
15130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

March 24, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by

KVB, Inc.

Kind of sample reported to us: Coal

Test 5, Site B

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12753

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	1.66	xxxxx
% Ash	8.78	8.93
% Volatile	34.22	34.80
% Fixed Carbon	55.34	56.27
	100.00	100.00
Btu	13472	13699
% Sulfur	0.89	0.91

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx	xxx
Softening (H=W)	xxx	xxx
Softening (H=½W)	xxx	xxx
Fluid	xxx	xxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser

R. A. HOUSER, Manager, Midwest Division

RAH:ljd

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 230 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16120 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 284-1173

March 24, 1978

KVB, INC.
600 South County Road 18
Shelard Tower, Ste. 1375
Minneapolis, MN 54426

		Sample identification by KVB, Inc.
Kind of sample reported to us	-----	Coal
Sample taken at	-----	Site B
Sample taken by	KVB, Inc.	Test 6
Date sampled	-----	

Analysis report no. 71-12754

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	1.99	xxxxx
% Ash	9.41	9.60
% Volatile	33.95	34.64
% Fixed Carbon	54.65	55.76
	100.00	100.00
Btu	13011	13275
% Sulfur	0.83	0.85

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxxxx	xxxxx
Softening (H=W)	xxxxx	xxxxx
Softening (H=½W)	xxxxx	xxxxx
Fluid	xxxxx	xxxxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:lf

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 29, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by KVB, Inc.

Kind of sample reported to us: Coal

Test 7, Site B

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12755

PROXIMATE ANALYSIS

	As Rec'd	Dry
% Moisture	1.08	xxxxx
% Ash	6.48	6.55
% Volatile	35.60	35.99
% F. Carbon	56.84	57.46
	100.00	100.00
Btu	13981	14134
% Sulfur	0.82	0.83

ULTIMATE ANALYSIS

% Moisture	1.08	xxxxx
% Carbon	78.08	78.93
% Hydrogen	5.25	5.31
% Nitrogen	1.37	1.39
% Chlorine	0.13	0.13
% Sulfur	0.82	0.83
% Ash	6.48	6.55
% Oxygen(diff.)	6.79	6.86
	100.00	100.00

FUSION TEMPERATURE OF ASH

	Reducing
Initial Def.	2700+°F
Soft. (H=W)	2700+°F
Soft. (H=1/2W)	2700+°F
Fluid	2700+°F

MINERAL ANALYSIS

	% Weight, Ignited
Silica, SiO_2	53.39
Alumina, Al_2O_3	30.71
Titania, TiO_2	1.54
Ferric Oxide, Fe_2O_3	6.41
Lime, CaO	1.90
Magnesia, MgO	0.75
Potassium Oxide, K_2O	1.15
Sodium Oxide, Na_2O	0.62
Sulfur Trioxide, SO_3	1.13
Phos. Pentoxide, P_2O_5	0.50
Undetermined	1.90
	100.00

Alk. as Na_2O, Dry Coal = 0.09
SILICA VALUE = 85.49
Base/Acid = 0.13
T_{250} Poises: 2900+°F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

Charter Member

RAH:ljd

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 29, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by KVB, Inc.

Test 8, Site B

Kind of sample reported to us: Coal

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12756

PROXIMATE ANALYSIS

	As Rec'd	Dry
% Moisture	4.39	xxxxx
% Ash	8.83	9.24
% Volatile	33.97	35.53
% F. Carbon	52.81	55.23
	100.00	100.00
Btu	13111	13713
% Sulfur	1.05	1.10

ULTIMATE ANALYSIS

% Moisture	4.39	xxxxx
% Carbon	72.66	75.99
% Hydrogen	4.96	5.19
% Nitrogen	0.85	0.89
% Chlorine	0.15	0.16
% Sulfur	1.05	1.10
% Ash	8.83	9.24
% Oxygen(diff)	7.11	7.43
	100.00	100.00

FUSION TEMPERATURE OF ASH

	Reducing
Initial Def.	2320°F
Soft. (H=W)	2570°F
Soft. (H=1/2W)	2620°F
Fluid	2700+°F

MINERAL ANALYSIS

	% Weight, Ignited
Silica, SiO_2	54.44
Alumina, Al_2O_3	26.78
Titania, TiO_2	0.99
Ferric Oxide, Fe_2O_3	9.29
Lime, CaO	2.02
Magnesia, MgO	1.43
Potassium Oxide, K_2O	2.50
Sodium Oxide, Na_2O	0.52
Sulfur Trioxide, SO_3	1.42
Phos. Pentoxide, P_2O_5	0.23
Undetermined	0.38
	100.00

Alk. as Na_2O, Dry Coal = 0.20
SILICA VALUE = 81.04
Base/Acid = 0.19
T_{250} Poises: 2755°F

RAH:ljd

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-2434

PLEASE ADDRESS ALL CORRESPONDENCE TO
18130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

March 27, 1978

KVB, INC.
600 South County Road 18
Shelard Tower, Ste. 1375
Minneapolis, MN 55426

Sample identification by
KVB, Inc.
P.O. 321-15900
Coal
Site B
Test 9

Kind of sample reported to us -----

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. 71-12757

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	5.05	xxxxx
% Ash	5.92	6.23
% Volatile	34.90	36.76
% Fixed Carbon	54.13	57.01
	100.00	100.00
Btu	13434	14149
% Sulfur	0.93	0.98

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxxxx	xxxxx
Softening (H=W)	xxxxx	xxxxx
Softening (H=½W)	xxxxx	xxxxx
Fluid	xxxxx	xxxxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:lf

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 24, 1978

KVB, INC.
600 South County Road 18
Shelard Tower, Ste. 1375
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

Coal

Site B

Test 11

Kind of sample reported to us -----

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. 71-12758

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	1.99	XXXXX
% Ash	5.08	5.18
% Volatile	35.44	36.16
% Fixed Carbon	57.49	58.66
	100.00	100.00
Btu	14077	14363
% Sulfur	0.75	0.77

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	XXXXX	XXXXX
Softening (H=W)	XXXXX	XXXXX
Softening (H=½W)	XXXXX	XXXXX
Fluid	XXXXX	XXXXX

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:lf

Charter Member

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COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

March 24, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by
KVB, Inc.

Kind of sample reported to us: Coal

Test 12, Site B

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12759

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	4.76	XXXXX
% Ash	6.50	6.83
% Volatile	34.88	36.62
% Fixed Carbon	53.86	56.55
	100.00	100.00
Btu	13368	14036
% Sulfur	0.85	0.89

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	XXX	XXX
Softening (H=W)	XXX	XXX
Softening (H=½W)	XXX	XXX
Fluid	XXX	XXX

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:ljd

Charter Member

CHICAGO, ILLINOIS • CHARLESTON, W.VA. • CLARKSBURG, W.VA. • CLEVELAND, OHIO • NORFOLK, VA. • HENDERSONVILLE • TOLEDO, OHIO • DENVER, COLORADO • BIRMINGHAM, ALABAMA • VANCOUVER, B.C.

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

March 29, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by KVB, Inc.

Test 15, Site B

Kind of sample reported to us: Coal

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12760

PROXIMATE ANALYSIS

	As Rec'd	Dry
% Moisture	5.48	xxxxx
% Ash	6.47	6.84
% Volatile	34.21	36.19
% F. Carbon	53.84	56.97
	100.00	100.00
Btu	13181	13946
% Sulfur	0.71	0.75

ULTIMATE ANALYSIS

% Moisture	5.48	xxxxx
% Carbon	74.11	78.41
% Hydrogen	4.99	5.28
% Nitrogen	1.44	1.52
% Chlorine	0.12	0.13
% Sulfur	0.71	0.75
% Ash	6.47	6.84
% Oxygen(diff.)	6.68	7.07
	100.00	100.00

FUSION TEMPERATURE OF ASH

	Reducing
Initial Def.	2700+°F
Soft. (H=W)	2700+°F
Soft. (H=1/2W)	2700+°F
Fluid	2700+°F

MINERAL ANALYSIS

	% Weight, Ignited
Silica, SiO_2	54.14
Alumina, Al_2O_3	30.00
Titania, TiO_2	1.43
Ferric Oxide, Fe_2O_3	6.35
Lime, CaO	1.90
Magnesia, MgO	0.81
Potassium Oxide, K_2O	1.55
Sodium Oxide, Na_2O	0.47
Sulfur Trioxide, SO_3	1.43
Phos. Pentoxide, P_2O_5	0.28
Undetermined	1.64
	100.00

Alk. as Na_2O, Dry Coal = 0.10
SILICA VALUE = 85.66
Base/Acid = 0.13
T_{250} Poises: 2900+°F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

Charter Member

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GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

March 29, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by KVB, Inc.

Kind of sample reported to us Coal

Test 16, Site B

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. 71-12761

PROXIMATE ANALYSIS

	As Rec'd	Dry
% Moisture	6.46	xxxxx
% Ash	6.96	7.44
% Volatile	33.73	36.06
% F. Carbon	52.85	56.50
	100.00	100.00
Btu	13001	13899
% Sulfur	0.75	0.80

ULTIMATE ANALYSIS

% Moisture	6.46	xxxxx
% Carbon	72.78	77.81
% Hydrogen	4.88	5.22
% Nitrogen	1.45	1.55
% Chlorine	0.11	0.12
% Sulfur	0.75	0.80
% Ash	6.96	7.44
% Oxygen(diff.)	6.61	7.06
	100.00	100.00

FUSION TEMPERATURE OF ASH

	Reducing
Initial Def.	2700+°F
Soft. (H=W)	2700+°F
Soft. (H=1/2W)	2700+°F
Fluid	2700+°F

MINERAL ANALYSIS

	% Weight, Ignited
Silica, SiO_2	53.39
Alumina, Al_2O_3	30.71
Titania, TiO_2	1.32
Ferric Oxide, Fe_2O_3	7.22
Lime, CaO	1.97
Magnesia, MgO	0.90
Potassium Oxide, K_2O	1.85
Sodium Oxide, Na_2O	0.42
Sulfur Trioxide, SO_3	1.43
Phos. Pentoxide, P_2O_5	0.31
Undetermined	0.48
	100.00

Alk. as Na_2O, Dry Coal = 0.12
SILICA VALUE = 81.20
Base/Acid = 0.14
T_{250} Poises: 2850°F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

Charter Member

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COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
18130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

March 24, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by KVB, Inc.

Kind of sample reported to us: Coal

Test 17, Site B

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12762

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	3.20	xxxxx
% Ash	6.99	7.22
% Volatile	35.28	36.45
% Fixed Carbon	54.53	56.33
	100.00	100.00
Btu	13535	13982
% Sulfur	0.77	0.80

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx	xxx
Softening (H=W)	xxx	xxx
Softening (H=½W)	xxx	xxx
Fluid	xxx	xxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:ljd

Charter Member

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COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

March 24, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by
KVB, Inc.

Kind of sample reported to us: Coal

Test 18, Site B

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12763

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	3.64	XXXXX
% Ash	5.66	5.87
% Volatile	35.24	36.57
% Fixed Carbon	55.46	57.56
	100.00	100.00
Btu	13696	14214
% Sulfur	0.71	0.74

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	XXX	XXX
Softening (H=W)	XXX	XXX
Softening (H=½W)	XXX	XXX
Fluid	XXX	XXX

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:ljd

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GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 364-1173

SINCE 1908

March 24, 1978

KVB, INC.
600 South County Road 18
Shelard Tower, Ste. 1375
Minneapolis, MN 54426

Sample identification by: KVB, Inc.

Coal

Site B

Test 19

Kind of sample reported to us: -----

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12764

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	4.75	XXXXX
% Ash	8.00	8.40
% Volatile	32.53	34.15
% Fixed Carbon	54.72	57.45
	100.00	100.00
Btu	13115	13768
% Sulfur	0.87	0.91

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	XXXXX	XXXXX
Softening (H=W)	XXXXX	XXXXX
Softening (H=½W)	XXXXX	XXXXX
Fluid	XXXXX	XXXXX

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:lf

Charter Member

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GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 24, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by KVB, Inc.

Kind of sample reported to us: Coal

Test 20, Site B

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12765

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	4.95	xxxxx
% Ash	8.22	8.65
% Volatile	33.81	35.57
% Fixed Carbon	53.02	55.78
	100.00	100.00
Btu	12972	13647
% Sulfur	1.06	1.12

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx	xxx
Softening (H=W)	xxx	xxx
Softening (H=½W)	xxx	xxx
Fluid	xxx	xxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:ljd

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PLEASE ADDRESS ALL CORRESPONDENCE TO
18130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1909

March 24, 1978

KVB, INC.
600 South County Road 18
Shelard Tower, Ste. 1375
Minneapolis, MN 54426

		Sample identification by
Kind of sample reported to us	-----	KVB, Inc.
Sample taken at	-----	Coal
Sample taken by	KVB, Inc.	Site B
Date sampled	-----	Test 21

Analysis report no. 71-12766

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	4.81	XXXXX
% Ash	8.42	8.85
% Volatile	33.42	35.11
% Fixed Carbon	53.35	56.04
	100.00	100.00
Btu	13097	13759
% Sulfur	0.89	0.94

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	XXXXX	XXXXX
Softening (H=W)	XXXXX	XXXXX
Softening (H=½W)	XXXXX	XXXXX
Fluid	XXXXX	XXXXX

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:lf

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 230 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

March 24, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by
KVB, Inc.

Test 22, Site B

Kind of sample reported to us: Coal

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12767

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	5.89	xxxxx
% Ash	8.26	8.78
% Volatile	33.05	35.12
% Fixed Carbon	52.80	56.10
	100.00	100.00
Btu	12926	13734
% Sulfur	0.91	0.97

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx	xxx
Softening (H=W)	xxx	xxx
Softening (H=½W)	xxx	xxx
Fluid	xxx	xxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:ljd

Charter Member

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COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 139 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-9494

PLEASE ADDRESS ALL CORRESPONDENCE TO
18130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1172

March 24, 1978

KVB, INC.
600 South County Road 18
Shelard Tower, Ste. 1375
Minneapolis, MN 5426

Sample identification by

KVB, Inc.

Coal

Site B

Test 23

Kind of sample reported to us -----

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. 71-12768

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	5.56	XXXXX
% Ash	7.60	8.05
% Volatile	33.31	35.27
% Fixed Carbon	53.53	56.68
	100.00	100.00
Btu	13077	13847
% Sulfur	0.91	0.96

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	XXXXX	XXXXX
Softening (H=W)	XXXXX	XXXXX
Softening (H=½W)	XXXXX	XXXXX
Fluid	XXXXX	XXXXX

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:lf

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 29, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by KVB, Inc.

Kind of sample reported to us: Coal

Test 24, Site B

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12769

PROXIMATE ANALYSIS

	As Rec'd	Dry
% Moisture	5.03	xxxxx
% Ash	16.79	17.68
% Volatile	30.97	32.61
% F. Carbon	47.21	49.71
	100.00	100.00
Btu	11667	12284
% Sulfur	0.75	0.79

ULTIMATE ANALYSIS

% Moisture	5.03	xxxxx
% Carbon	65.56	69.03
% Hydrogen	4.44	4.68
% Nitrogen	1.30	1.37
% Chlorine	0.10	0.11
% Sulfur	0.75	0.79
% Ash	16.79	17.68
% Oxygen(diff.)	6.03	6.34
	100.00	100.00

FUSION TEMPERATURE OF ASH

	Reducing
Initial Def.	2520°F
Soft. (H=W)	2700+°F
Soft. (H=1/2W)	2700+°F
Fluid	2700+°F

MINERAL ANALYSIS

	% Weight, Ignited
Silica, SiO_2	54.90
Alumina, Al_2O_3	28.56
Titania, TiO_2	1.21
Ferric Oxide, Fe_2O_3	7.74
Lime, CaO	1.95
Magnesia, MgO	1.08
Potassium Oxide, K_2O	1.95
Sodium Oxide, Na_2O	0.42
Sulfur Trioxide, SO_3	1.17
Phos. Pentoxide, P_2O_5	0.23
Undetermined	0.79
	100.00

Alk. as Na_2O, Dry Coal = 0.30
SILICA VALUE = 83.60
Base/Acid = 0.16
T_{250} Poises: 2830°F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:ljd

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 29, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by KVB, Inc.

Kind of sample reported to us: Coal

Test 25, Site B

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12770

PROXIMATE ANALYSIS

	As Rec'd	Dry
% Moisture	2.90	xxxxx
% Ash	10.66	10.98
% Volatile	35.38	36.44
% F. Carbon	51.06	52.58
	100.00	100.00
Btu	12923	13309
% Sulfur	0.91	0.94

ULTIMATE ANALYSIS

% Moisture	2.90	xxxxx
% Carbon	72.27	74.43
% Hydrogen	4.98	5.13
% Nitrogen	1.19	1.23
% Chlorine	0.07	0.07
% Sulfur	0.91	0.94
% Ash	10.66	10.98
% Oxygen(diff.)	7.02	7.22
	100.00	100.00

FUSION TEMPERATURE OF ASH

	Reducing
Initial Def.	2450°F
Soft. (H=W)	2660°F
Soft. (H=1/2W)	2700+°F
Fluid	2700+°F

MINERAL ANALYSIS

	% Weight, Ignited
Silica, SiO_2	54.90
Alumina, Al_2O_3	27.14
Titania, TiO_2	1.10
Ferric Oxide, Fe_2O_3	7.22
Lime, CaO	2.80
Magnesia, MgO	1.32
Potassium Oxide, K_2O	1.95
Sodium Oxide, Na_2O	0.52
Sulfur Trioxide, SO_3	1.71
Phos. Pentoxide, P_2O_5	0.17
Undetermined	1.17
	100.00

Alk. as Na_2O, Dry Coal = 0.20
SILICA VALUE = 82.88
Base/Acid = 0.17
T_{250} Poises: 2810°F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:ljd

Charter Member

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GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

March 24, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by KVB, Inc.

Test 26, Site B

Kind of sample reported to us: Coal

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12771

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	3.25	xxxxx
% Ash	8.53	8.82
% Volatile	34.35	35.50
% Fixed Carbon	53.87	55.68
	100.00	100.00
Btu	13235	13679
% Sulfur	0.95	0.98

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx	xxx
Softening (H=W)	xxx	xxx
Softening (H=½W)	xxx	xxx
Fluid	xxx	xxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:ljd

Charter Member

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COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 230 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

March 24, 1978

KVB, INC.
600 South County Road 18
Shelard Tower, Ste. 1375
Minneapolis, MN 54426

Sample identification by

KVB, Inc.

Coal

Site B

Test 27

Kind of sample reported to us -----

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. 71-12772

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	5.30	XXXXX
% Ash	5.83	6.16
% Volatile	33.97	35.87
% Fixed Carbon	54.90	57.97
	100.00	100.00
Btu	13266	14008
% Sulfur	0.68	0.72

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	XXXXX	XXXXX
Softening (H=W)	XXXXX	XXXXX
Softening (H=½W)	XXXXX	XXXXX
Fluid	XXXXX	XXXXX

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:lf

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 230 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16139 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 396-1173

SINCE 1908

March 24, 1978

KVB, INC.
600 South County Road 18
Minneapolis, Minnesota 55426

Sample identification by
KVB, Inc.

Kind of sample reported to us: Coal

Test 28, Site B

Sample taken at: -----

Sample taken by: KVB, Inc.

Date sampled: -----

Analysis report no. 71-12773

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	5.98	xxxxx
% Ash	5.81	6.18
% Volatile	33.88	36.03
% Fixed Carbon	54.33	57.79
	100.00	100.00
Btu	13318	14165
% Sulfur	0.87	0.93

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxx	xxx
Softening (H=W)	xxx	xxx
Softening (H=½W)	xxx	xxx
Fluid	xxx	xxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:ljd

Charter Member

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COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 230 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-9454

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 396-1173

SINCE 1908

April 17, 1978

KVB, INC.
600 S. County Road 18
Minneapolis, MN 54426

Att: Jim Burlinjam

Sample identification by

KVB, Inc.

Kind of sample reported to us -----

Coal Test 30 Site B Old

Sample taken at -----

No Purchase Order Received
As of 4/17/78.

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. 71-13761

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	1.51	xxxxx
% Ash	10.35	10.51
% Volatile	32.91	33.41
% Fixed Carbon	55.23	56.08
	100.00	100.00
Btu	13271	13474
% Sulfur	0.95	0.96

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxxxx	xxxxx
Softening (H=W)	xxxxx	xxxxx
Softening (H=½W)	xxxxx	xxxxx
Fluid	xxxxx	xxxxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:lau

Charter Member

CHICAGO, ILLINOIS • CHARLESTON, W.VA. • CLARKSBURG, W.VA. • CLEVELAND, OHIO • NORFOLK, VA. • HENDERSON, KENTUCKY • ZANESVILLE, OHIO • DENVER, COLORADO • BIRMINGHAM, ALABAMA • VANCOUVER, B.C.

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
18130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1906

April 19, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Kind of sample reported to us	-----	Sample Identification by	KVB, Inc.
Sample taken at	-----		Coal
Sample taken by	KVB, Inc.		Test 30 Site B
Date sampled	-----		New

Analysis report no. 71-13758

PROXIMATE ANALYSIS	As received	Dry basis
% Moisture	4.71	xxxxx
% Ash	8.35	8.76
% Volatile	32.73	34.35
% Fixed Carbon	54.21	56.89
	100.00	100.00
Btu	13222	13875
% Sulfur	0.87	0.91
% Alk. as Na_2O	xxxxx	0.19

SULFUR FORMS		
% Pyritic Sulfur	0.18	0.19
% Sulfate Sulfur	0.03	0.03
% Organic Sulfur	0.66	0.69

WATER SOLUBLE ALKALIES		
% Na_2O =	xxxxx	xxxxx
% K_2O =	xxxxx	xxxxx

FUSION TEMPERATURE OF ASH	Reducing	Oxidizing
Initial Deformation	2700+°F	2700+°F
H is Cone Height — Softening (H = W)	2700+°F	2700+°F
W is Cone Width — Softening (H = ½W)	2700+°F	2700+°F
Fluid	2700+°F	2700+°F

% EQUILIBRIUM MOISTURE = xxxxx
HARDGROVE GRINDABILITY INDEX = xxxxx
FREE SWELLING INDEX = xxxxx

ULTIMATE ANALYSIS	% Weight As received	% Weight Dry basis
Moisture	4.71	xxxxx
Carbon	73.61	77.25
Hydrogen	4.79	5.03
Nitrogen	1.38	1.45
Chlorine	0.11	0.12
Sulfur	0.87	0.91
Ash	8.35	8.76
Oxygen (diff)	6.18	6.48
	100.00	100.00

MINERAL ANALYSIS OF ASH	% Weight Ignited Basis
Silica; SiO_2	55.65
Alumina, Al_2O_3	29.30
Titania, TiO_2	1.76
Ferric oxide, Fe_2O_3	6.34
Lime, CaO	1.40
Magnesia, MgO	0.87
Potassium oxide, K_2O	2.15
Sodium oxide, Na_2O	0.77
Sulfur trioxide, SO_3	0.86
Phos. pentoxide, P_2O_5	0.38
Undetermined	0.52
	100.00

SILICA VALUE – 86.60
BASE: ACID RATIO 0.13
T_{250} Temperature = 2900+°F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager Mineral Division

RAH:lf

Charter Member

CHICAGO, ILLINOIS • CHARLESTON, W.VA. • CLARKSBURG, W.VA. • CLEVELAND, OHIO • NORFOLK, VA. • HENDERSON, KY • TOLEDO, OHIO • DENVER, COLORADO • BIRMINGHAM, ALABAMA • VANCOUVER, B.C.

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

April 17, 1978

KVB, INC.
600 S. County Road 18
Minneapolis, MN 54426

Att: Jim Burlinjam

Sample identification by KVB, Inc.

Kind of sample reported to us -----

Coal Test 31 Site B Old

Sample taken at -----

No Purchase Order Received
As of 4/17/78.

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. 71-13762

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	1.50	xxxxx
% Ash	9.24	9.38
% Volatile	34.34	34.86
% Fixed Carbon	54.92	55.76
	100.00	100.00
Btu	13371	13575
% Sulfur	0.98	0.99

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxxxx	xxxxx
Softening (H=W)	xxxxx	xxxxx
Softening (H=½W)	xxxxx	xxxxx
Fluid	xxxxx	xxxxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

April 18, 1978

KVB, INC.
600 S. County Road 18
Minneapolis, MN 54426

Kind of sample reported to us -----

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Sample identification by

KVB, Inc.

Coal Test 31 Site B New

Analysis report no. 71-13759

PROXIMATE ANALYSIS	As received	Dry basis
% Moisture	4.36	xxxxx
% Ash	8.18	8.55
% Volatile	34.43	36.00
% Fixed Carbon	53.03	55.45
	100.00	100.00
Btu	13150	13750
% Sulfur	0.93	0.97
% Alk. as Na_2O	xxxxx	0.18

SULFUR FORMS		
% Pyritic Sulfur	0.20	0.21
% Sulfate Sulfur	0.00	0.00
% Organic Sulfur	0.73	0.76

WATER SOLUBLE ALKALIES		
% Na_2O =	xxxxx	xxxxx
% K_2O =	xxxxx	xxxxx

FUSION TEMPERATURE OF ASH	Reducing	Oxidizing
Initial Deformation	2700+°F	2700+°F
H is Cone Height — Softening (H = W)	2700+°F	2700+°F
W is Cone Width — Softening (H = ½W)	2700+°F	2700+°F
Fluid	2700+°F	2700+°F

% EQUILIBRIUM MOISTURE = xxxxx
HARDGROVE GRINDABILITY INDEX = xxxxx
FREE SWELLING INDEX = xxxxx

ULTIMATE ANALYSIS	% Weight As received	% Weight Dry basis
Moisture	4.36	xxxxx
Carbon	73.29	76.63
Hydrogen	4.81	5.03
Nitrogen	1.10	1.15
Chlorine	0.07	0.07
Sulfur	0.93	0.97
Ash	8.18	8.55
Oxygen (diff)	7.26	7.60
	100.00	100.00

MINERAL ANALYSIS OF ASH	% Weight Ignited Basis
Silica; SiO_2	52.64
Alumina, Al_2O_3	31.40
Titania, TiO_2	1.54
Ferric oxide, Fe_2O_3	6.44
Lime, CaO	1.90
Magnesia, MgO	1.05
Potassium oxide, K_2O	2.30
Sodium oxide, Na_2O	0.63
Sulfur trioxide, SO_3	1.05
Phos. pentoxide, P_2O_5	0.44
Undetermined	0.61
	100.00

SILICA VALUE = 84.86
BASE: ACID RATIO 0.14
T_{250} Temperature = 2870°F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Branch Manager

RAH:lau

Charter Member

CHICAGO, ILLINOIS • CHARLESTON, W.VA. • CLARKSBURG, W.VA. • CLEVELAND, OHIO • NORFOLK, VA. • HENDERSON, KY • TOLEDO, OHIO • DENVER, COLORADO • BIRMINGHAM, ALABAMA • VANCOUVER, B.C.

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 230 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-8484

PLEASE ADDRESS ALL CORRESPONDENCE TO:
10130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 864-1173

SINCE 1908

April 17, 1978

KVB, INC.
600 S. County Road 18
Minneapolis, MN 54426

Att: Jim Burlinjam

Sample identification by

KVB, Inc.

Kind of sample reported to us -----

Coal Test 32 Site B Old

Sample taken at -----

No Purchase Order Received
As of 4/17/78.

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. 71-13764

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	5.65	xxxxx
% Ash	8.62	9.14
% Volatile	32.84	34.81
% Fixed Carbon	52.89	56.05
	100.00	100.00
Btu	12860	13630
% Sulfur	0.92	0.98

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxxxx	xxxxx
Softening (H=W)	xxxxx	xxxxx
Softening (H=½W)	xxxxx	xxxxx
Fluid	xxxxx	xxxxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 230 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 284-1173

SINCE 1908

April 17, 1978

KVB, INC.
600 S. County Road 18
Minneapolis, MN 54426

Att: Jim Burlinjam

Sample identification by KVB, Inc.

Kind of sample reported to us -----

Coal Test 32 Site B New

Sample taken at -----

No Purchase Order Received
As of 4/17/78.

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. 71-13763

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	5.31	xxxxx
% Ash	7.79	8.23
% Volatile	33.35	35.22
% Fixed Carbon	53.55	56.55
	100.00	100.00
Btu	13049	13781
% Sulfur	0.99	1.05

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxxxx	xxxxx
Softening (H=W)	xxxxx	xxxxx
Softening (H=½W)	xxxxx	xxxxx
Fluid	xxxxx	xxxxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Analytical Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-6424

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

April 17, 1978

KVB, INC.
600 S. County Road 18
Minneapolis, MN 54426
Att: Jim Burlinjam

Sample identification by

KVB, Inc.

Coal Test 33 Site B Old

No Purchase Order Received
As of 4/17/78.

Kind of sample reported to us -----

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. 71-13765

PROXIMATE ANALYSIS

	As received	Dry basis
% Moisture	1.31	xxxxx
% Ash	8.03	8.14
% Volatile	34.56	35.02
% Fixed Carbon	56.10	56.84
	100.00	100.00
Btu	13666	13847
% Sulfur	0.67	0.68

FUSION TEMPERATURE OF ASH

	Reducing	Oxidizing
Initial Deformation	xxxxx	xxxxx
Softening (H=W)	xxxxx	xxxxx
Softening (H=½W)	xxxxx	xxxxx
Fluid	xxxxx	xxxxx

H is Cone Height
W is Cone Width

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager, Midwest Division

RAH:lau

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 · AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

April 19, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Kind of sample reported to us	-----	Sample identification by	KVB, Inc.
Sample taken at	-----		Coal
Sample taken by	KVB, Inc.		Test 33 Site B
Date sampled	-----		New

Analysis report no. 71-13760

PROXIMATE ANALYSIS	As received	Dry basis
% Moisture	2.75	xxxxx
% Ash	6.77	6.96
% Volatile	35.17	36.17
% Fixed Carbon	55.31	56.87
	100.00	100.00
Btu	13649	14035
% Sulfur	0.79	0.81
% Alk. as Na_2O	xxxxx	0.09
SULFUR FORMS		
% Pyritic Sulfur	0.17	0.17
% Sulfate Sulfur	0.02	0.02
% Organic Sulfur	0.60	0.62
WATER SOLUBLE ALKALIES		
% Na_2O =	xxxxx	xxxxx
% K_2O =	xxxxx	xxxxx

ULTIMATE ANALYSIS	% Weight As received	% Weight Dry basis
Moisture	2.75	xxxxx
Carbon	76.37	78.53
Hydrogen	5.06	5.20
Nitrogen	1.11	1.14
Chlorine	0.15	0.15
Sulfur	0.79	0.81
Ash	6.77	6.96
Oxygen (diff)	7.00	7.21
	100.00	100.00

MINERAL ANALYSIS OF ASH	% Weight Ignited Basis
Silica; SiO_2	54.14
Alumina, Al_2O_3	29.99
Titania, TiO_2	1.65
Ferric oxide, Fe_2O_3	6.60
Lime, CaO	2.00
Magnesia, MgO	0.68
Potassium oxide, K_2O	1.23
Sodium oxide, Na_2O	0.47
Sulfur trioxide, SO_3	1.15
Phos. pentoxide, P_2O_5	0.62
Undetermined	1.47
	100.00

FUSION TEMPERATURE OF ASH	Reducing	Oxidizing
Initial Deformation	2600°F	2700+°F
Softening (H = W)	2700+°F	2700+°F
Softening (H = ½W)	2700+°F	2700+°F
Fluid	2700+°F	2700+°F

H is Cone Height
W is Cone Width

% EQUILIBRIUM MOISTURE = xxxxx
HARDGROVE GRINDABILITY INDEX = xxxxx
FREE SWELLING INDEX = xxxxx

SILICA VALUE = 85.37
BASE: ACID RATIO 0.13
T_{250} Temperature = 2900+°F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. HOUSER, Manager Midwest Division

RAH:lf

Charter Member

CHICAGO, ILLINOIS • CHARLESTON, W.VA. • CLARKSBURG, W.VA. • CLEVELAND, OHIO • NORFOLK, VA. • HENDERSON, KY • TOLEDO, OHIO • DENVER, COLORADO • BIRMINGHAM, ALABAMA • VANCOUVER, B.C.

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 230 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-6434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 County Road 18
Minneapolis, MN 55426

Sample identification by

KVB, Inc.

P. O. 321-15900

See Below for Identification

Kind of sample reported to us ------

Sample taken at ------

Sample taken by KVB, Inc.

Date sampled ------

Analysis report no. See Below

LAB NUMBER	IDENTIFICATION	%SULFUR (DRY)
71-12793	Multiclone Ash Site B Test 1	0.31

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Hauser, Manager, Midwest Division

RAH:lf

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

March 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 County Road 18
Minneapolis, MN 55426

Sample identification by KVB, Inc.

P. O. 321-15900

See Below for Identification

Kind of sample reported to us -----

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. See Below

LAB NUMBER	IDENTIFICATION	%ASH (DRY)
71-12794	Multiclone Ash Site B Test 2	36.97
71-12795	Multiclone Ash Site B Test 3	51.37
71-12796	Multiclone Ash Site B Test 4	49.13
71-12797	Multiclone Ash Site B Test 6	31.97
71-12798	Multiclone Ash Site B Test 7	34.15
71-12800	Multiclone Ash Site B Test 8	68.36
71-12801	Multiclone Ash Site B Test 9	44.66
71-12802	Multiclone Ash Site B Tests 11 & 12	46.11
71-12803	Multiclone Ash Site B Test 17	34.02
71-12804	Multiclone Ash Site B Test 18	34.76
71-12805	Multiclone Ash Site B Test 19	37.06
71-12806	Multiclone Ash Site B Test 20	23.36
71-12807	Multiclone Ash Site B Test 21	47.11
71-12808	Multiclone Ash Site B Test 22	26.07
71-12809	Multiclone Ash Site B Test 23	20.52
71-12810	Multiclone Ash Site B Test 24	38.02
71-12811	Multiclone Ash Site B Test 25	43.32
71-12812	Multiclone Ash Site B Test 26	52.28
71-12813	Multiclone Ash Site B Test 27	52.79
71-12814	Multiclone Ash Site B Test 28	39.83

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

Charter Member

RAH:lf

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-0434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 County Road 18
Minneapolis, MN 55426

Sample identification by KVB, Inc.

P. O. 321-15900

See Below for Identification

Kind of sample reported to us -----

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. See Below

LAB NUMBER	IDENTIFICATION	%ASH (DRY)
71-12799	Boiler Outlet Ash Site B Test 7	21.91

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. H[illegible], Manager, Midwest Division

RAH:lf

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-6434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 County Road 18
Minneapolis, MN 55426

Sample identification by

KVB, Inc.

P. O. 321-15900

See Below for Identification

Kind of sample reported to us -----

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. See Below

LAB NUMBER	IDENTIFICATION	%SULFUR (DRY)
71-12774	Bottom Ash Site B Test 1	0.01

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lf

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-8434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

March 27, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 County Road 18
Minneapolis, MN 55426

Sample identification by KVB, Inc.

P. O. 321-15900

See Below for Identification

Kind of sample reported to us -----

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. See Below

LAB NUMBER	IDENTIFICATION	%ASH (DRY)
71-12775	Bottom Ash Site B Test 2	91.79
71-12776	Bottom Ash Site B Test 3	94.60
71-12777	Bottom Ash Site B Test 4	80.94
71-12778	Bottom Ash Site B Test 6	90.31
71-12779	Bottom Ash Site B Tests 8 & 9	75.82
71-12780	Bottom Ash Site B Tests 11 & 12	96.01
71-12781	Bottom Ash Site B Test 17	94.34
71-12782	Bottom Ash Site B Test 18	91.10
71-12783	Bottom Ash Site B Test 19	90.00
71-12784	Bottom Ash Site B Test 20	93.54
71-12785	Bottom Ash Site B Test 21	93.31
71-12786	Bottom Ash Site B Test 22	74.24
71-12787	Bottom Ash Site B Test 23	85.78
71-12788	Bottom Ash Site B Test 24	86.44
71-12789	Bottom Ash Site B Test 25	90.11
71-12790	Bottom Ash Site B Test 26	82.43
71-12791	Bottom Ash Site B Test 27	93.56
71-12792	Bottom Ash Site B Test 28	76.61

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lf

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-0434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

OFFICE TEL. (312) 264-1173

SINCE 1908

April 18, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 S. County Road 18
Minneapolis, MN 54426

Att: Jim Burlinjam

Sample identification by KVB, Inc.

Kind of sample reported to us ----- See Below for Identification

Sample taken at -----

No Purchase Order Received As of 4/18/78.

Sample taken by KVB, Inc.

Date sampled -----

Analysis report no. See Below

LAB NO.	IDENTIFICATION	SULFUR (DRY)
71-13766	Bottom Ash Test 32 Site B	0.04%
71-13770	Multiclone Ash Test 32 Site B	0.08%

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lf

Charter Member

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 228 NORTH LA SALLE STREET, CHICAGO, ILLINOIS 60601 • AREA CODE 312 726-9434

PLEASE ADDRESS ALL CORRESPONDENCE TO:
16130 VAN DRUNEN ROAD, SOUTH HOLLAND, ILLINOIS 60473

SINCE 1908

OFFICE TEL. (312) 264-1173

April 18, 1978

KVB, INC.
Shelard Tower, Ste. 1375
600 County Road 18
Minneapolis, MN 54426

Att: Jim Burlinjam

Kind of sample reported to us -----

Sample taken at -----

Sample taken by KVB, Inc.

Date sampled -----

Sample identification by KVB, Inc.

See Below for Identification

No Purchase Order Received
As of 4/18/78.

Analysis report no. See Below

LAB NO.	IDENTIFICATION	ASH (DRY)	SULFUR (DRY)
71-13767	Bottom Ash Test 30 Site B	83.51%	0.08%
71-13768	Bottom Ash Test 31 Site B	86.41%	0.03%
71-13769	Bottom Ash Test 33 Site B	91.29%	0.03%
71-13771	Multiclone Ash Test 30 Site B	45.84%	0.07%
71-13772	Multiclone Ash Test 31 Test B	23.90%	0.07%
71-13773	Multiclone Ash Test 33 Site B	25.22%	0.08%

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

R. A. Houser, Manager, Midwest Division

RAH:lf

Charter Member

CHICAGO, IL • BILLINGS, MT • BIRMINGHAM, AL • CHARLESTON, WV • CLARKSBURG, WV • CLEVELAND • DENVER, CO • GOLDEN, CO • HENDERSON, KY • MIDDLESBORO, KY • MOBILE, AL • NEW ORLEANS, LA • NORFOLK, VA • PIKEVILLE, KY • VANCOUVER, B.C. CAN.

COMBUSTIBLES DATA SHEET

SITE AGMA TEST SITE B

Crucible Number	Sample Origin	Crucible Weight grams	Crucible & Sample Weight Post 110°C gms	Sample Weight grams	Post 750°C grams	Δ Weight grams	% Combustibles
1	BLR OUT TEST #1	18.4197	19.0388	0.6194	18.6268	0.4120	66.5
		18.4196	19.0387		18.6268		
		18.4195	19.0389		18.6269		
	AVG.	18.4196	19.0388		18.6268		
9	BLR OUT TEST #1	18.0960	19.0844	0.9890	18.5710	0.5137	51.9
		18.0959	19.0846		18.5708		
		18.0958	19.0848		18.5708		
	AVG.	18.0959	19.0846		18.5709		
3	BLR OUT TEST #3	18.5963	19.6547	1.0587	19.1615	0.4931	46.5
		18.5961	19.6545		19.1615		
		18.5961	19.6548		19.1617		
	AVG.	18.5962	19.6547		19.1616		
4	BLR OUT TEST #3	18.0826	18.9585	0.8762	18.6039	0.3545	40.4
		18.0824	18.9586		18.6043		
		18.0823	18.9588		18.6040		
	AVG.	18.0824	18.9586		18.6041		
5	BLR OUT TEST #4	18.3867	19.2749	0.8882	18.7738	0.5012	56.4
		18.3868	19.2752		18.7735		
		18.3869	19.2749		18.7740		
	AVG.	18.3868	19.2750		18.7738		
6	BLR OUT TEST #4	17.6396	18.5344	0.8950	18.0507	0.4838	54.0
		17.6395	18.5343		18.0507		
		17.6395	18.5347		18.0506		
	AVG.	17.6395	18.5345		18.0507		
9	BLR OUT TEST #6	18.0967	20.7386	2.6423	19.2630	1.4757	55.8
		18.0963	20.7388		19.2632		
		—	20.7389		19.2632		
	AVG.	18.0965	20.7388		19.2631		
5	BLR OUT TEST #6	18.3804	19.5103	1.1230	18.7929	0.7174	63.9
		18.3871	19.5102		18.7929		
		18.3873	19.5105		18.7930		
	AVG.	18.3873	19.5103		18.7929		
6	BLR OUT TEST #7	17.6397	18.9674	1.3276	17.9439	1.0233	77.1
		17.6397	18.9672		17.9440		
		—	18.9672		17.9441		
	AVG.	17.6397	18.9673		17.9440		
3	BLR OUT TEST #7	18.5965	20.4633	1.8668	19.3765	1.0866	58.2
		18.5965	20.4631		19.3767		
		18.5964	20.4634		19.3768		
	AVG.	18.5965	20.4633		19.3767		
	AVG.						

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COMBUSTIBLES DATA SHEET

SITE ABMA TEST SITE B

Crucible Number	Sample Origin	Crucible Weight grams	Crucible & Sample Weight Post 110°C gms	Sample Weight grams	Post 750°C grams	Δ Weight grams	% Combustibles
11	TEST #6 SASS 10μ	18.6144	21.3271	2.7129	19.6190	1.7082	63.0
		18.6143	21.3272		19.6192		
		18.6143	21.3274				
	AVG.	18.6143	21.3273		19.6191		
7	TEST #6 SASS 3μ	18.5162	19.5671	1.0510	19.2091	0.3581	34.1
		18.5162	19.5673		19.2091		
		18.5163	19.5673		—		
	AVG.	18.5162	19.5672		19.2091		
2	TEST #6 SASS 1μ	3.9724	4.4416	0.4693	4.3167	0.1248	26.6
		3.9723	4.4417		4.3170		
		3.9725	4.4417		—		
	AVG.	3.9724	4.4417		4.3169		
1	TEST #7 SASS 10μ	3.6804	3.7864	0.1061	3.7772	0.0092	8.7
		3.6803	3.7864		3.7772		
		3.6803	3.7865		3.7773		
	AVG.	3.6803	3.7864		3.7772		
3	TEST #7 SASS 3μ	3.6681	3.9320	0.2639	3.8622	0.0698	26.4
		3.6681	3.9320		3.8622		
		3.6681	3.9321		3.8623		
	AVG.	3.6681	3.9320		3.8622		
4	TEST #7 SASS 1μ	3.7104	3.8782	0.1680	3.8374	0.0408	24.3
		3.7103	3.8783		3.8375		
		3.7102	3.8784		3.8376		
	AVG.	3.7103	3.8783		3.8375		
9	BLR OUT TEST #8	18.0965	19.4049	1.3086	18.6225	0.7825	59.7
		18.0964	19.4050		18.6226		
		18.0963	19.4050		18.6225		
	AVG.	18.0964	19.4050		18.6225		
1	MECH OUT TEST #8	3.6805	3.9674	0.2870	3.9233	0.0443	15.4
		3.6804	3.9676		3.9231		
		3.6805	3.9676		3.9231		
	AVG.	3.6805	3.9675		3.9232		
7	BLR OUT TEST #9	18.5161	19.6324	1.1165	18.9441	0.6883	61.6
		18.5158	19.6324		18.9441		
		18.5159	19.6324		18.9442		
	AVG.	18.5159	19.6324		18.9441		
2	MECH OUT TEST #9	3.9724	4.0605	0.0881	4.0413	0.0193	21.9
		3.9723	4.0605		4.0411		
		3.9725	4.0606		4.0411		
	AVG.	3.9724	4.0605		4.0412		
	AVG.						

COMBUSTIBLES DATA SHEET

SITE ABMA TEST SITE B

Crucible Number	Sample Origin	Crucible Weight grams	Crucible & Sample Weight Post 110°C gms	Sample Weight grams	Post 750°C grams	Δ Weight grams	% Combustibles
5	BLR OUT TEST #11	18.3871	19.1791	0.7923	18.6717	0.5075	64.0
		18.3869	19.1794		18.6719		
		18.3869	19.1795		18.6718		
	AVG.	18.3870	19.1793		18.6718		
3	MECH OUT TEST #11	3.6682	3.8644	0.1965	3.7988	0.0663	33.7
		3.6680	3.8646		3.7984		
		3.6680	3.8647		3.7977		
	AVG.	3.6681	3.8646		3.7983		
11	BLR OUT TEST #12	18.6144	19.8386	1.2242	19.0716	0.7668	62.6
		18.6142	19.8384		19.0717		
		18.6142	19.8384		19.0717		
	AVG.	18.6143	19.8385		19.0717		
4	MECH OUT TEST #12	3.7105	3.8882	0.1778	3.8474	0.0410	23.0
		3.7105	3.8883		3.8473		
		3.7106	3.8883		3.8472		
	AVG.	3.7105	3.8883		3.8473		
4	BLR OUT TEST #15	18.0837	19.6025	1.5193	18.5531	1.0495	69.0
		18.0835	19.6027		18.5530		
		18.0833	19.6027		18.5531		
	AVG.	18.0835	19.6026		18.5531		
9	BLR OUT TEST #16	18.0966	19.5995	1.5034	18.4734	1.1262	74.9
		18.0963	19.5998		18.4735		
		18.0961	19.5999		18.4736		
	AVG.	18.0963	19.5997		18.4735		
5	BLR OUT TEST #17	18.3871	20.2616	1.8748	19.0834	1.1788	62.8
		18.3871	20.2619		19.0829		
		18.3871	20.2621		19.0830		
	AVG.	18.3871	20.2619		19.0831		
1	MECH OUT TEST #17	18.4203	18.7533	0.3333	18.6750	0.0787	23.6
		18.4203	18.7537		18.6749		
		18.4204	18.7538		18.6748		
	AVG.	18.4203	18.7536		18.6749		
7	BLR OUT TEST #18	18.5158	19.7485	1.2328	18.9575	0.7914	64.2
		18.5160	19.7488		18.9573		
		18.5161	19.7490		18.9573		
	AVG.	18.5160	19.7488		18.9574		
11	MECH OUT TEST #18	18.6142	19.4931	0.8790	19.2961	0.1971	22.4
		18.6142	19.4931		19.2961		
		18.6143	19.4935		19.2960		
	AVG.	18.6142	19.4932		19.2961		
	AVG.						

COMBUSTIBLES DATA SHEET

SITE ABMA TEST SITE B

Crucible Number	Sample Origin	Crucible Weight grams	Crucible & Sample Weight Post 110°C gms	Sample Weight grams	Post 750°C grams	Δ Weight grams	Combustibles
11	BLR OUT	18.6142	20.5262	1.9124	19.3402	1.1862	62.0
	TEST #19	18.6141	20.5266		19.3403		
		18.6141	20.5266		19.3403		
	AVG.	18.6141	20.5265		19.3403		
7	MECH OUT	18.5162	19.0788	0.5629	18.9167	0.1622	28.8
	TEST #19	18.5160	19.0790		18.9169		
		18.5160	19.0793		18.9169		
	AVG.	18.5161	19.0790		18.9168		
9	BLR OUT	18.0964	20.3482	2.2516	18.8815	1.4664	65.1
	TEST #20	18.0964	20.3477		18.8816		
		18.0963	20.3482		18.8816		
	AVG.	18.0964	20.3480		18.8816		
5	MECH OUT	18.3871	18.8334	0.4464	18.7085	0.1250	28.0
	TEST #20	18.3872	18.8338		18.7085		
		18.3872	18.8336		18.7087		
	AVG.	18.3872	18.8336		18.7086		
1	BLR OUT	18.4198	20.5347	2.1151	19.3664	1.1683	55.2
	TEST #21	18.4198	20.5351		19.3667		
		18.4196	20.5347		19.3665		
	AVG.	18.4197	20.5348		19.3665		
4	MECH OUT	18.0830	18.5462	0.4634	18.4292	0.1172	25.2
	TEST #21	18.0828	18.5464		18.4290		
		18.0829	18.5464		18.4291		
	AVG.	18.0829	18.5463		18.4291		
5	BLR OUT	18.3871	20.7431	2.3562	19.4855	1.2579	53.3
	TEST #22	18.3871	20.7435		19.4854		
		18.3872	20.7432		19.4853		
	AVG.	18.3871	20.7433		19.4854		
4	MECH OUT	18.0827	18.5046	0.4221	18.3824	0.1223	28.9
	TEST #22	18.0829	18.5048		18.3825		
		18.0827	18.5050		18.3825		
	AVG.	18.0827	18.5048		18.3825		
9	BLR OUT	18.0966	19.8814	1.7850	18.7945	1.0871	60.9
	TEST #23	18.0965	19.8814		18.7943		
		18.0965	19.8817		18.7943		
	AVG.	18.0965	19.8815		18.7944		
11	MECH OUT	18.6145	19.1814	0.5673	19.0297	0.1518	267
	TEST #23	18.6143	19.1817		19.0298		
		18.6142	19.1817		19.0298		
	AVG.	18.6143	19.1816		19.0298		
	AVG.						

COMBUSTIBLES DATA SHEET

SITE ABMA TEST SITE B

Crucible Number	Sample Origin	Crucible Weight grams	Crucible & Sample Weight Post 110°C gms	Sample Weight grams	Post 750°C grams	Δ Weight grams	% Combustibles
7	BLR OUT TEST #24	18.6143	20.1823	1.5680	19.3140	0.8683	55.3
		18.6144	20.1823		19.3142		
		18.6144	20.1825		19.3142		
	AVG.	18.6144	20.1824		19.3141		
1	MECH OUT TEST #24	18.4196	20.2834	1.8639	19.2937	0.9898	53.1
		18.4197	20.2834		19.2937		
		18.4196	20.2836		19.2938		
	AVG.	18.4196	20.2835		19.2937		
4	BLR OUT 10μ SASS TEST #24	3.7104	4.9578	1.2475	4.5289	0.4288	34.3
		3.7102	4.9577		4.5290		
		3.7104	4.9579		4.5291		
	AVG.	3.7103	4.9578		4.5290		
1	BLR OUT 3μ SASS TEST #24	3.6804	4.3331	0.6527	4.1683	0.1648	25.2
		3.6803	4.3332		4.1683		
		3.6804	4.3331		4.1684		
	AVG.	3.6804	4.3331		4.1683		
2	BLR OUT 1μ SASS TEST #24	3.9722	4.4051	0.4328	4.3018	0.1032	23.8
		3.9722	4.4050		4.3018		
		3.9722	4.4050		4.3018		
	AVG.	3.9722	4.4050		4.3018		
3	BLR OUT TEST #25	18.5968	21.7327	3.1363	20.2440	1.4890	47.0
		18.5966	21.7332		20.2439		
		18.5965	21.7329		20.2439		
	AVG.	18.5966	21.7329		20.2439		
8	MECH OUT TEST #25	3.8301	4.2465	0.4168	4.1427	0.1042	25.0
		3.8300	4.2470		4.1426		
		3.8300	4.2469		4.1425		
	AVG.	3.8300	4.2468		4.1426		
3	BLR OUT 10μ SASS TEST #25	3.6679	5.0674	1.3993	4.7406	0.3267	23.3
		3.6680	5.0672		4.7406		
		3.6680	5.0672		4.7406		
	AVG.	3.6680	5.0673		4.7406		
4	BLR OUT 3μ SASS TEST #25	3.7103	4.8947	1.1843	4.6398	0.2548	21.5
		3.7104	4.8947		4.6399		
		3.7104	4.8948		4.6400		
	AVG.	3.7104	4.8947		4.6399		
2	BLR OUT 1μ SASS TEST #25	3.9721	4.1808	0.2086	4.1403	0.0406	19.5
		3.9723	4.1810		4.1403		
		3.9724	4.1809		4.1404		
	AVG.	3.9723	4.1809		4.1403		
	AVG.						

COMBUSTIBLES DATA SHEET

SITE ABMA TEST SITE B

Crucible Number	Sample Origin	Crucible Weight grams	Crucible & Sample Weight Post 110°C gms	Sample Weight grams	Post 750°C grams	Δ Weight grams	% Combustibles
3	BLR OUT TEST #26	18.5967	20.0876	1.4912	19.2356	0.8523	57.1
		18.5966	20.0879		19.2355		
		18.5966	20.0878		19.2354		
	AVG.	18.5966	20.0878		19.2355		
7	BLR OUT TEST #27	18.5163	20.2619	1.7457	19.2615	1.0006	57.3
		18.5163	20.2621		19.2615		
		18.5165	20.2622		19.2614		
	AVG.	18.5164	20.2621		19.2615		
9	BLR OUT TEST #28	18.0968	19.5309	1.4341	18.5221	1.0086	70.3
		18.0967	19.5308		18.5122		
		18.0967	19.5308		18.5123		
	AVG.	18.0967	19.5308		18.5122		
6	MECH OUT TEST #26	3.7395	4.1363	0.3970	4.0307	0.1057	26.6
		3.7395	4.1366		4.0309		
		3.7395	4.1366		4.0309		
	AVG.	3.7395	4.1365		4.0308		
1	MECH OUT TEST #27	3.6804	3.9931	0.3130	3.9045	0.0888	28.3
		3.6803	3.9934		3.9045		
		3.6802	3.9933		3.9046		
	AVG.	3.6803	3.9933		3.9045		
3	MECH OUT TEST #28	3.6680	3.8134	0.1457	3.7708	0.0426	29.2
		3.6678	3.8136		3.7710		
		3.6677	3.8135		3.7710		
	AVG.	3.6678	3.8135		3.7709		
4	BLR OUT TEST #26 10μ SASS	18.0827	20.2290	2.1467	19.5358	0.6935	32.3
		18.0824	20.2293		19.5357		
		18.0825	20.2293		19.5357		
	AVG.	18.0825	20.2292		19.5357		
10	BLR OUT TEST #26 3μ SASS	3.7695	4.7666	0.9971	4.4722	0.2945	29.5
		3.7698	4.7669		4.4724		
		3.7698	4.7668		4.4724		
	AVG.	3.7697	4.7668		4.4723		
7	BLR OUT TEST #26 1μ SASS	3.7827	4.1558	0.3731	4.0649	0.0911	24.4
		3.7830	4.1561		4.0650		
		3.7829	4.1561		4.0649		
	AVG.	3.7829	4.1560		4.0649		
	AVG.						
	AVG.						

KVB

SIEVE ANALYSIS TEST REPORT

TEST NO. 1

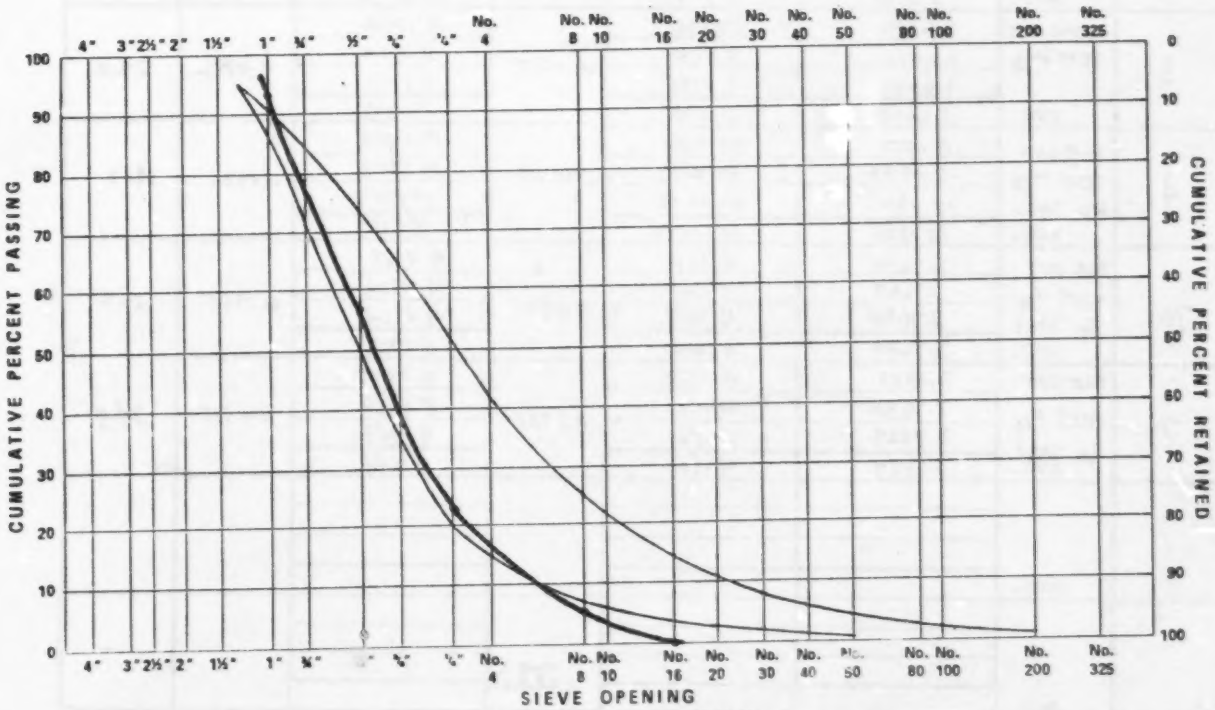
DATE SAMPLE TAKEN 12-21-77

TEST SITE B

TEST PERFORMED BY JOB

SAMPLE IDENTIFICATION Kentucky Cumberland (wet)

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	168.7	611.2 377.2	651.0	6.7	9731.5	100.0	1
1"	↓	1781.7 2162.0	3606.3	37.1	9080.5	93.3	2
½"		1467.1 2123.1	3252.8	33.4	5474.2	56.2	4
¼"		849.9 1139.8	1652.3	17.0	2221.4	22.8	8
#8		389.7 474.9	527.2	5.4	569.1	5.8	16
#16		210.6	41.9	0.4	41.9	0.4	16



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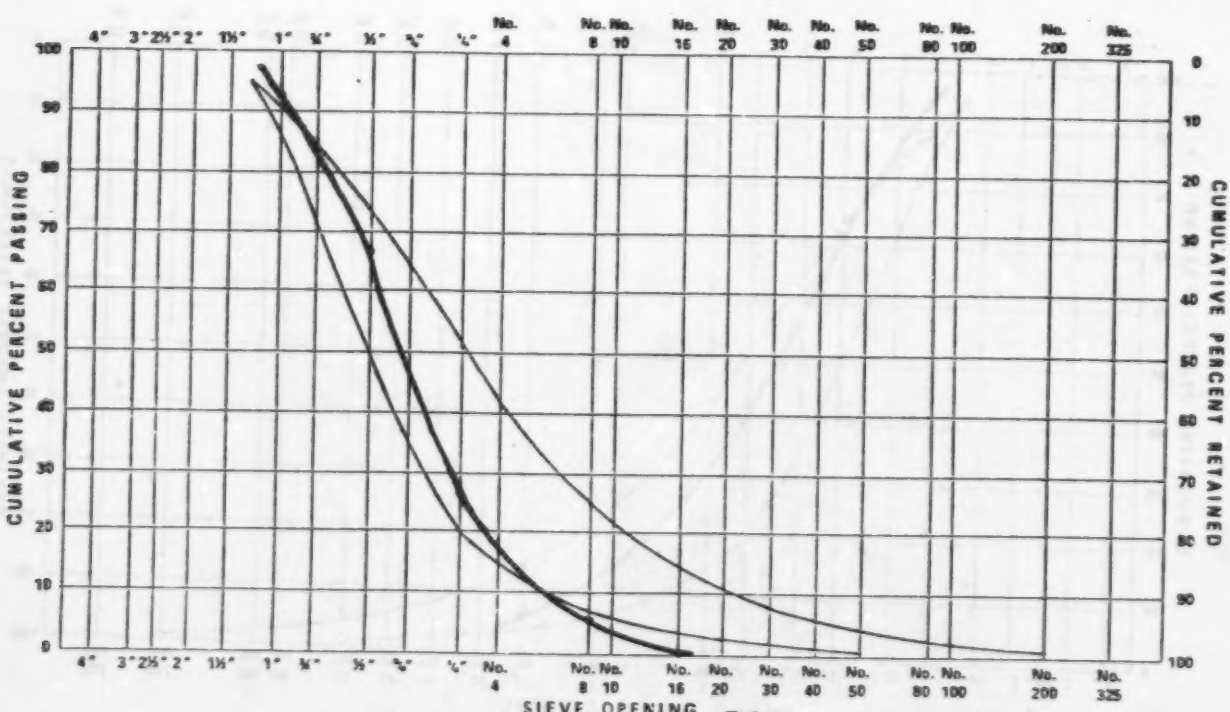
SIEVE ANALYSIS TEST REPORT

TEST NO. 2 DATE SAMPLE TAKEN 12-21-77

TEST SITE B TEST PERFORMED BY JOB

SAMPLE IDENTIFICATION Kentucky Cumberland (wet)

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	168.7	716.1	547.4	7.3	7488.5	100.0	1
1"	↓	2177.2	2008.5	26.8	6941.1	92.7	2
½"		1912.7 1383.3	2958.6	39.5	4932.6	65.9	4
¼"		1727.3	1558.6	20.8	1974.0	26.4	8
#8		575.1	406.4	5.5	415.4	5.6	16
#16		177.1	9.0	0.1	9.0	0.1	16



15900

KVB

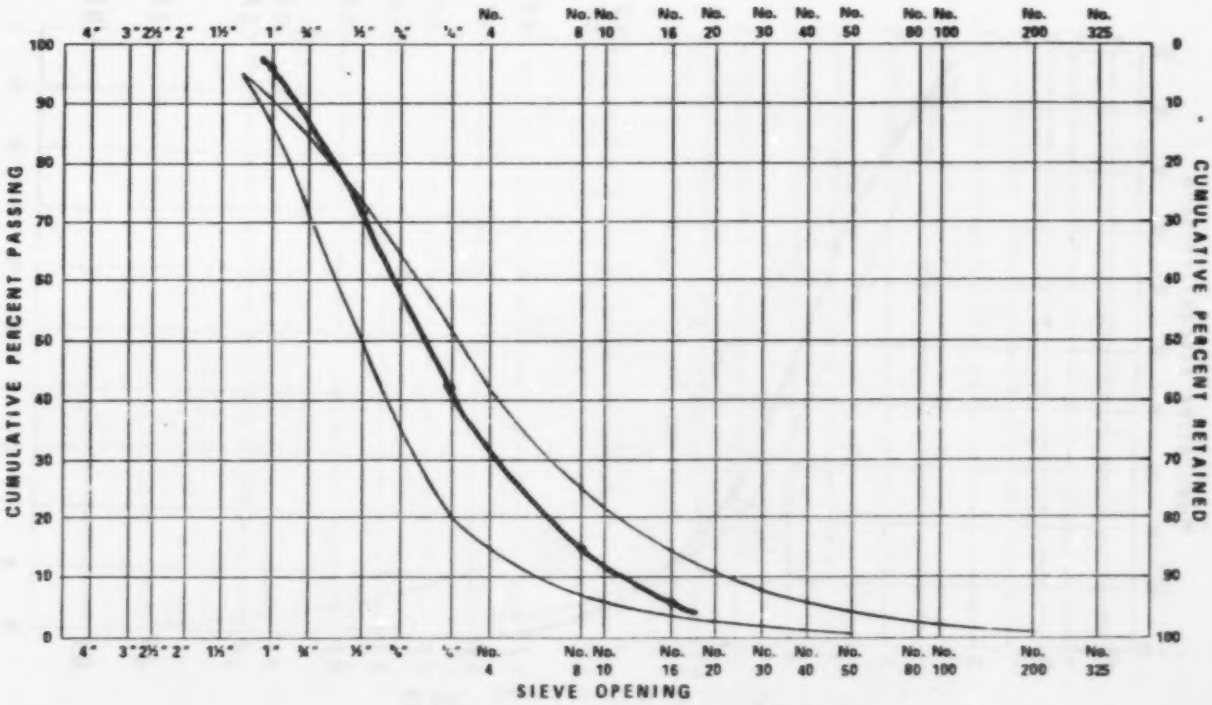
SIEVE ANALYSIS TEST REPORT

TEST NO. 3 DATE SAMPLE TAKEN 1-5-78

TEST SITE B TEST PERFORMED BY JOB

SAMPLE IDENTIFICATION Hartfield (dried)

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	168.9	354.8 341.5	3585	3.3	10,757.2	100.0	1
1"	↓	1814.4 1210.4	2687.0	25.0	10,398.7	96.7	2
½"	↓	1886.7 1667.8	3216.7	29.9	7711.7	71.7	4
¼"	↓	2017.3 1246.6	2926.1	27.2	4495.0	41.8	8
#8	↓	1176.1	1007.2	9.4	1568.9	14.6	16
#16	↓	730.6	561.7	5.2	561.7	5.2	16



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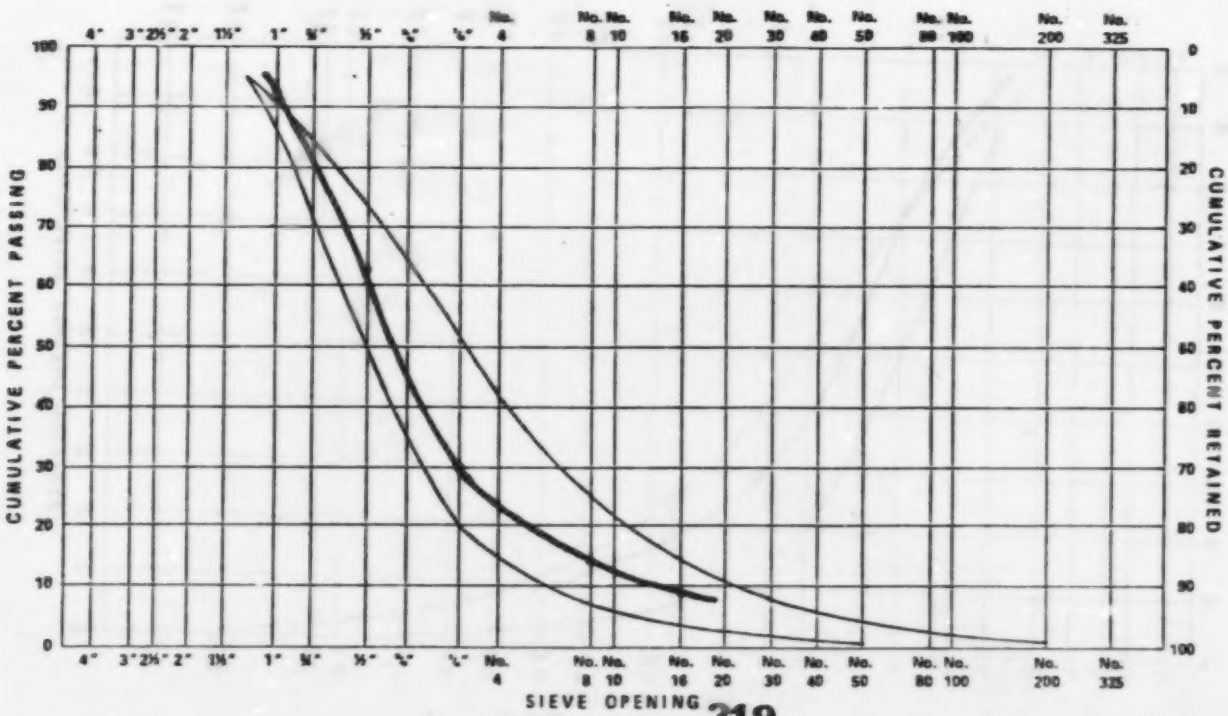
SIEVE ANALYSIS TEST REPORT

TEST NO. 4 DATE SAMPLE TAKEN 1-6-78

TEST SITE B TEST PERFORMED BY JOB

SAMPLE IDENTIFICATION Kentucky Cumberland (Dried)

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	168.9	416.7 725.8	804.7	7.9	10,151.8	100.0	1
1"		1444.0 1833.0	2939.2	29.0	9347.1	92.1	2
½"		2105.5 1543.3	3361.0	33.1	6407.9	63.1	4
¼"		1119.3 823.3	1604.8	15.8	3046.9	30.0	8
#8		4938 354.6	510.6	5.0	1442.1	14.2	16
#16		1100.4	931.5	9.2	931.5	9.2	16



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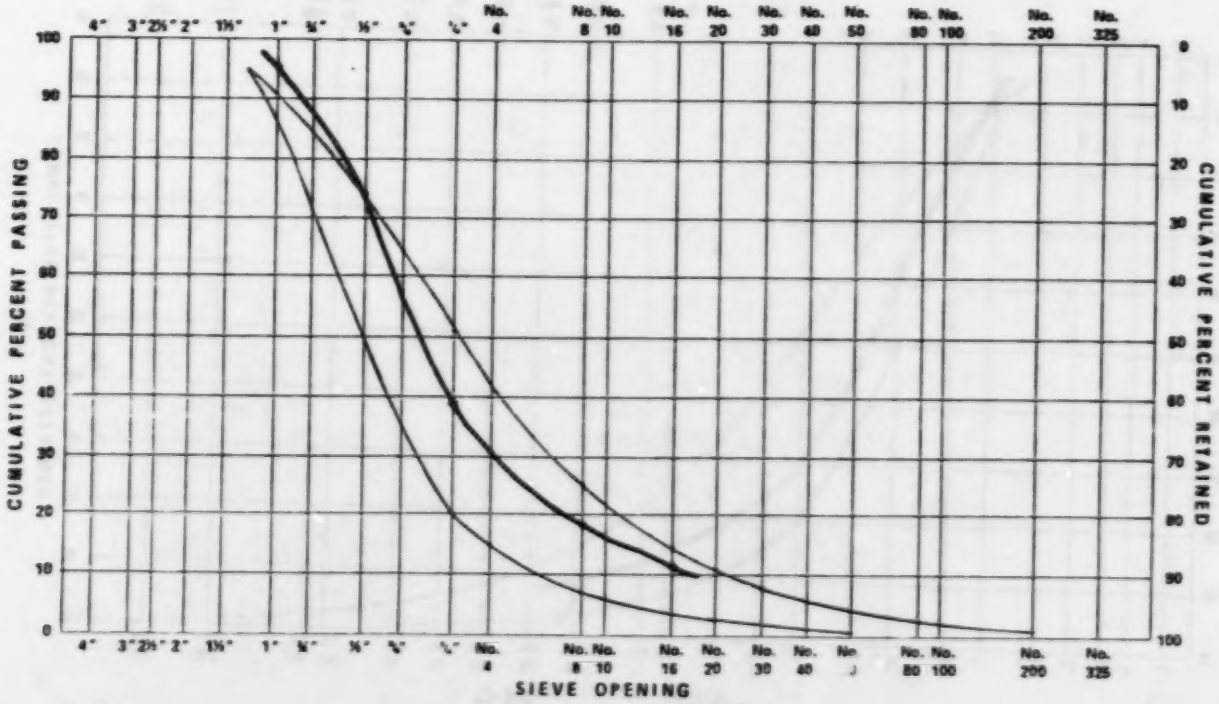
SIEVE ANALYSIS TEST REPORT

TEST NO. 5 DATE SAMPLE TAKEN 1-8-78

TEST SITE B TEST PERFORMED BY JOB

SAMPLE IDENTIFICATION Hatfield

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	168.9	578.0	409.1	4.5	9153.4	100.0	1
1"		2229.0	2060.1	22.5	8744.3	95.5	2
½"		878.7 2592.6	3133.5	34.2	6684.2	73.0	4
¼"		2057.1	1888.2	20.6	3550.7	38.8	8
#8		804.9	636.0	6.9	1662.5	18.2	16
#16		1195.4	1026.5	11.2	1026.5	11.3	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 6

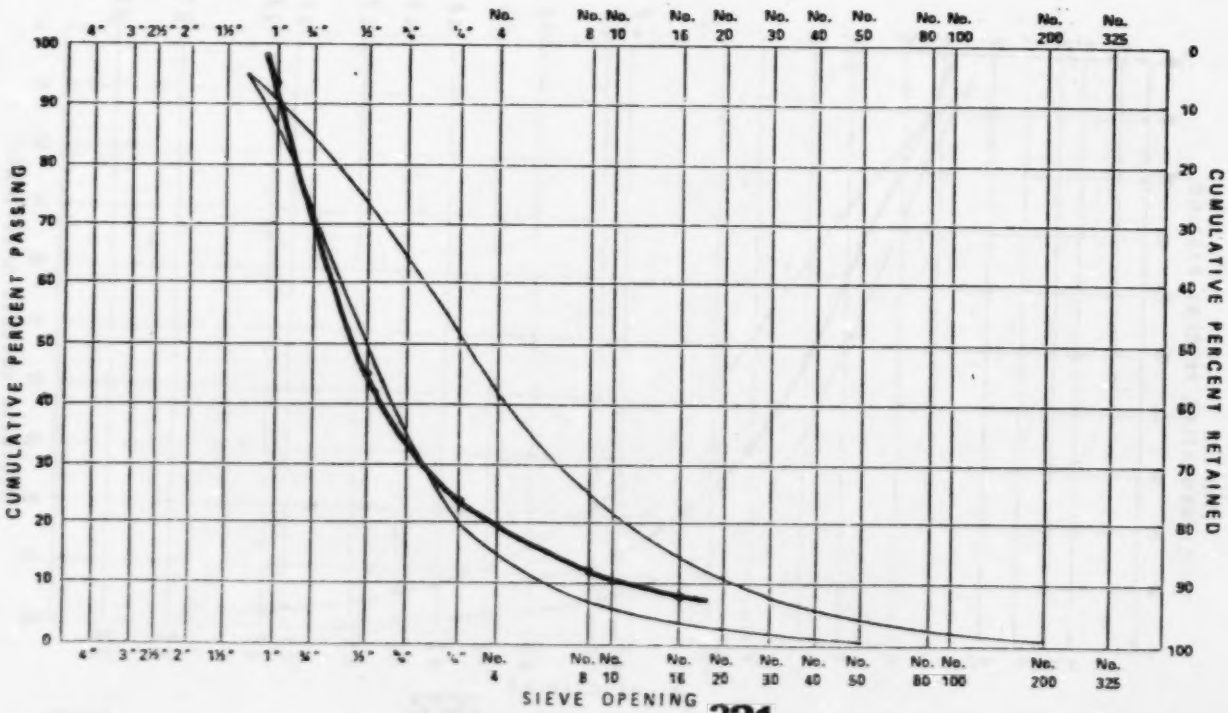
DATE SAMPLE TAKEN 11-78

TEST SITE B

TEST PERFORMED BY JB

SAMPLE IDENTIFICATION Southeast

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	169.1	633.3	464.2	5.9	7796.0	100.0	1
1"		1848.4 2275.9	3786.1	48.6	7331.8	94.1	2
½"		1893.0	1726.9	22.2	3545.7	45.5	4
¼"		1082.5	913.4	11.7	1818.8	23.3	8
#8		473.3	304.2	3.9	905.4	11.6	16
#16		770.3	601.2	7.7	601.2	7.7	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 7

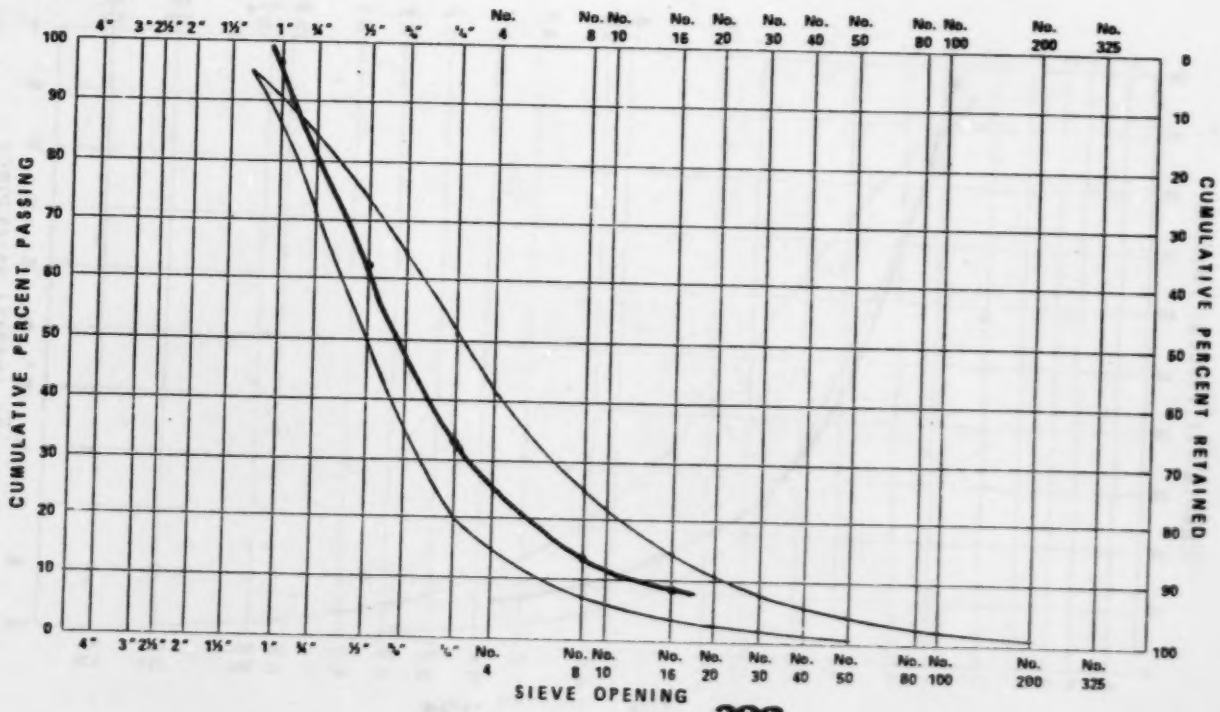
TEST SITE B

SAMPLE IDENTIFICATION Southeast

DATE SAMPLE TAKEN 1-12-78

TEST PERFORMED BY JOB

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	169.1	407.6	238.5	34	7040.9	100.0	1
1"		933.9 1881.1	2476.8	35.2	6802.4	96.7	2
½"		2251.7	2082.6	29.6	4325.6	61.5	4
¼"		1426.6	1257.5	17.9	2243.0	31.9	8
#8		533.5	364.4	5.2	985.5	14.0	16
#16		790.2	621.1	8.8	621.1	8.8	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 8

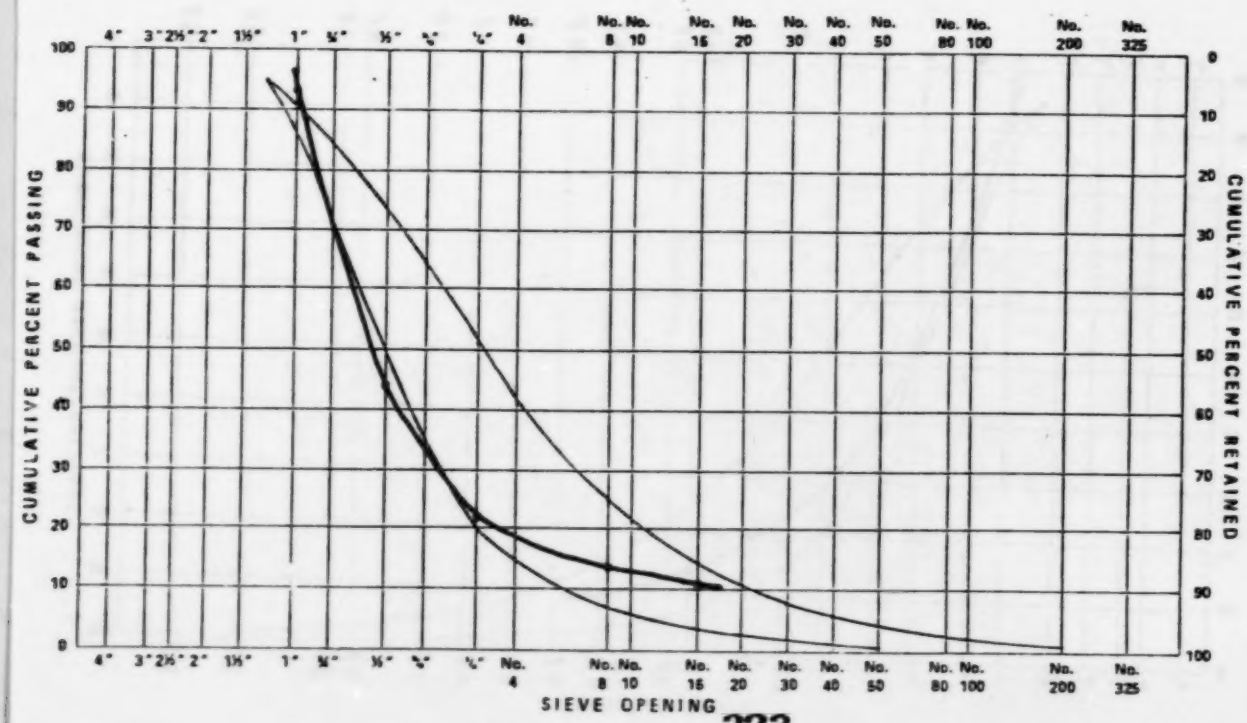
TEST SITE B

SAMPLE IDENTIFICATION Kentucky Cumberland

DATE SAMPLE TAKEN 1-25-78

TEST PERFORMED BY JOB, RAP

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	1705	6645 239.7	563.2	6.6	8588.2	100.0	1
1"	↓	1460.6 1622.7 1659.6	4231.4	49.3	8025.0	93.5	2
½"		1723.2 548.0	1980.2	23.1	3793.6	44.2	4
¼"		600.6 352.4	612.0	7.1	1813.4	21.1	8
#8		290.6 353.7	303.3	3.5	1201.4	14.0	16
#16		498.5 740.6	898.1	10.5	898.1	10.5	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 9

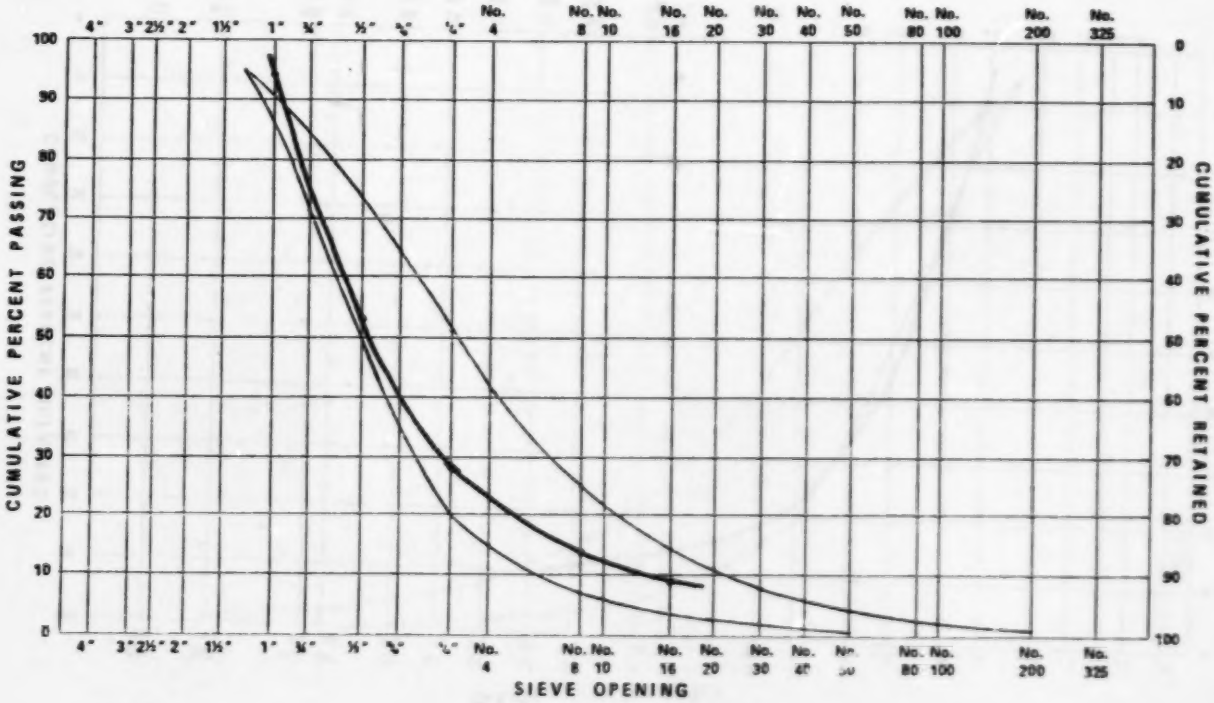
TEST SITE B

SAMPLE IDENTIFICATION Kentucky Cumberland

DATE SAMPLE TAKEN 1-25-78

TEST PERFORMED BY JOB, RAP

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	2781	656.4	378.3	5.6	6781.6	100.0	1
1"	170.5	2219.2 979.1	2857.3	42.1	4403.3	94.4	2
1/2"		1807.7	1637.2	24.1	3546.0	52.3	4
1/4"		1139.2	468.7	14.3	1908.8	28.2	8
#8		487.6	317.1	4.7	940.1	13.9	16
#16		743.5	623.0	9.2	623.0	9.2	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 11

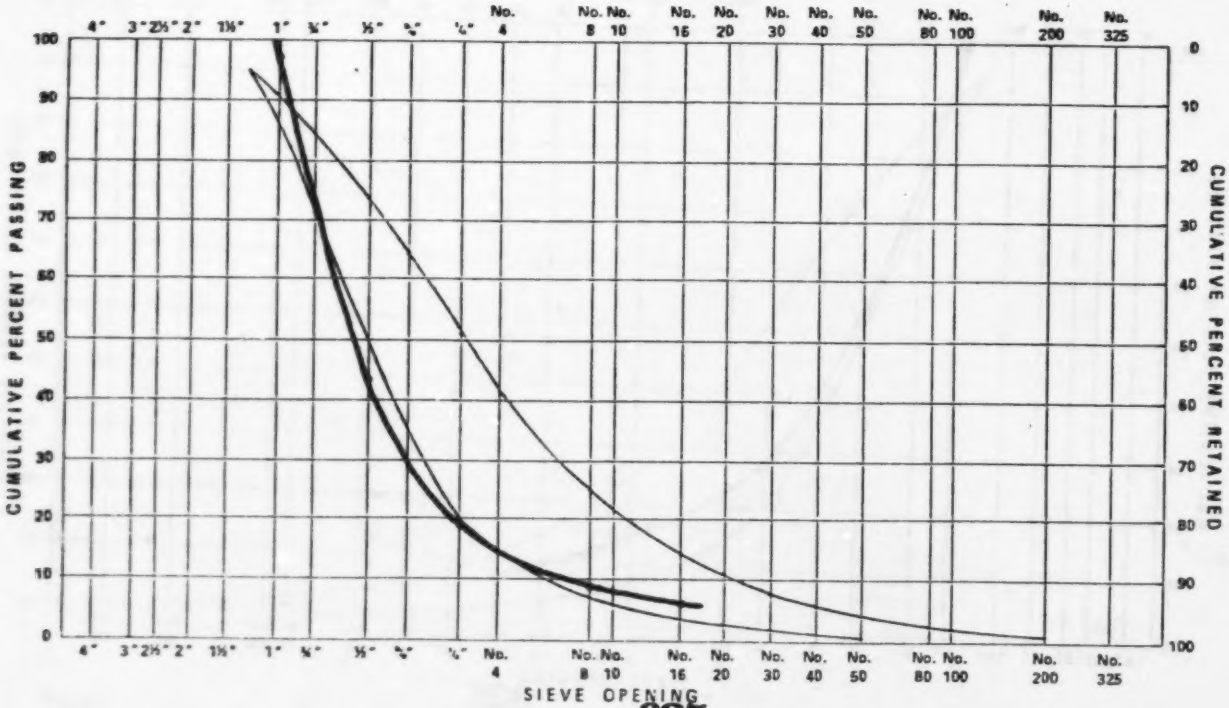
TEST SITE B

SAMPLE IDENTIFICATION Reload

DATE SAMPLE TAKEN 1-28-78

TEST PERFORMED BY JB

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	170.2	263.6 329.1	252.3	2.6	9623.4	100.0	1
1"		1410.8 2352.8 1421.4	5174.4	53.8	9371.1	97.4	2
1/2"		1675.8 1075.4	2411.2	25.1	4196.7	43.6	4
1/4"		904.1 382.0	945.7	9.8	1785.5	18.5	8
#8		422.0 208.4	290.0	3.0	839.8	8.7	16
#16		720.0	549.8	5.7	549.8	5.7	16



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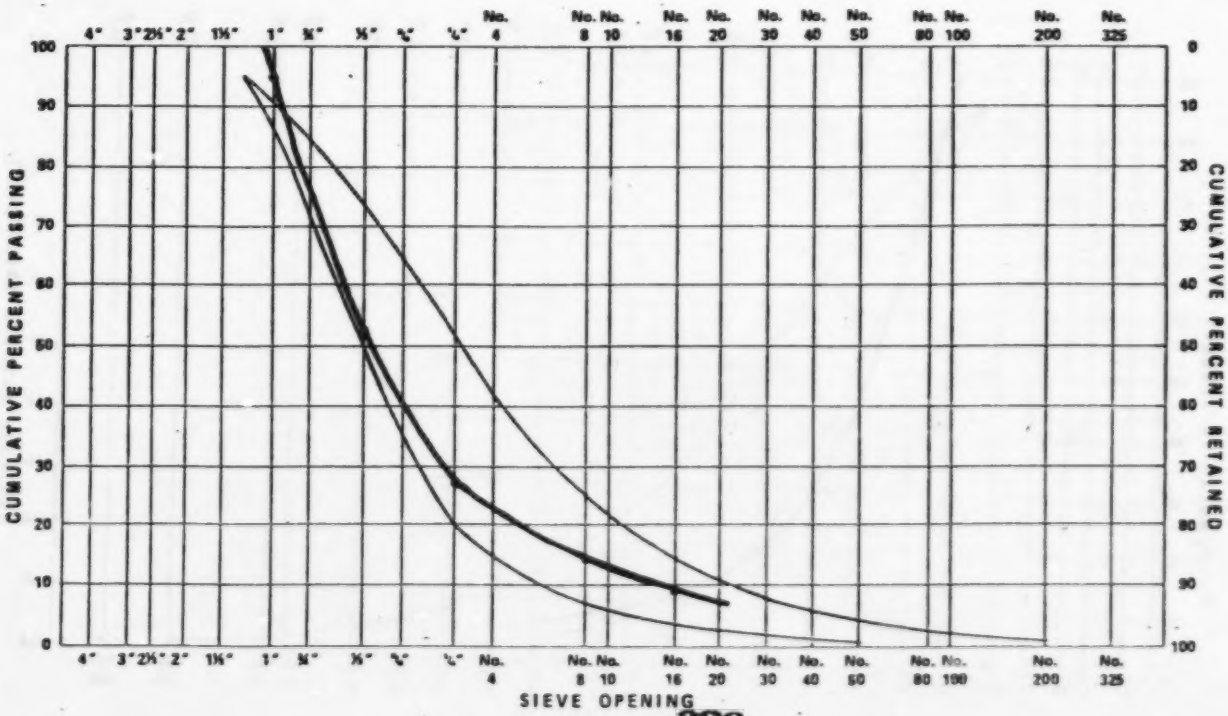
SIEVE ANALYSIS TEST REPORT

TEST NO. 12 DATE SAMPLE TAKEN 1-25-78

TEST SITE B TEST PERFORMED BY JOB

SAMPLE IDENTIFICATION Reload

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	170.5	333.9 453.6	446.5	5.0	8898.4	100.0	1
1"	170.5	2109.4 2086.6	3855.5	43.3	8451.9	95.1	2
½"	170.5	1457.9 1627.8	2203.7	24.8	4596.4	51.8	4
¼"	170.5	991.6 539.4	1190.0	13.4	2392.7	27.0	8
#8	170.5	479.4 240.9	379.3	4.3	1202.7	13.6	16
#16	170.5	993.9	823.4	9.3	823.4	9.3	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 15

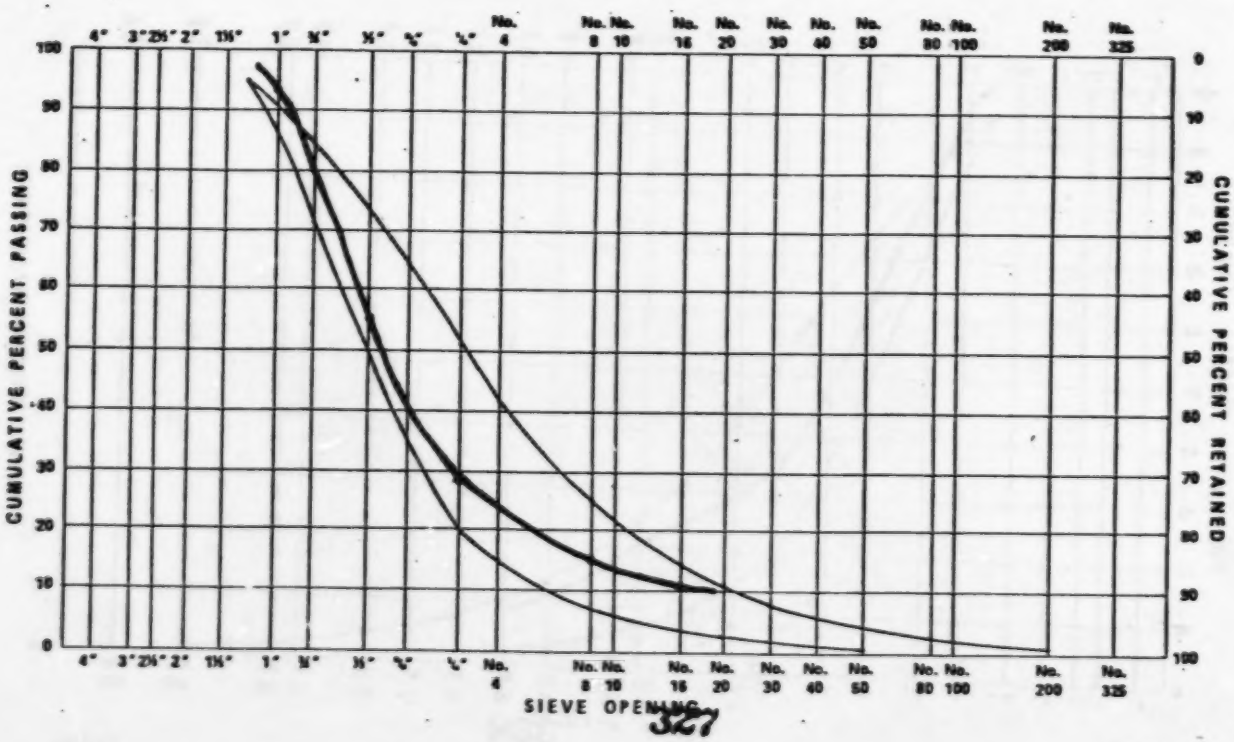
TEST SITE B

SAMPLE IDENTIFICATION Reload

DATE SAMPLE TAKEN 2-6-78

TEST PERFORMED BY JOB

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	170.6	343.9 404.8	462.5	5.9	7801.3	100.0	1
1"	170.6	1902.0 1507.2	3068.0	39.3	7338.8	94.1	2
½"	170.6	1503.3 889.1	2051.2	26.3	4270.8	54.8	4
¼"	170.6	916.5 455.6	1030.9	13.2	2219.6	28.5	8
#8	170.6	465.8 239.9	364.5	4.7	1188.7	15.3	16
#16	170.6	994.8	824.2	10.6	824.2	10.6	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 16

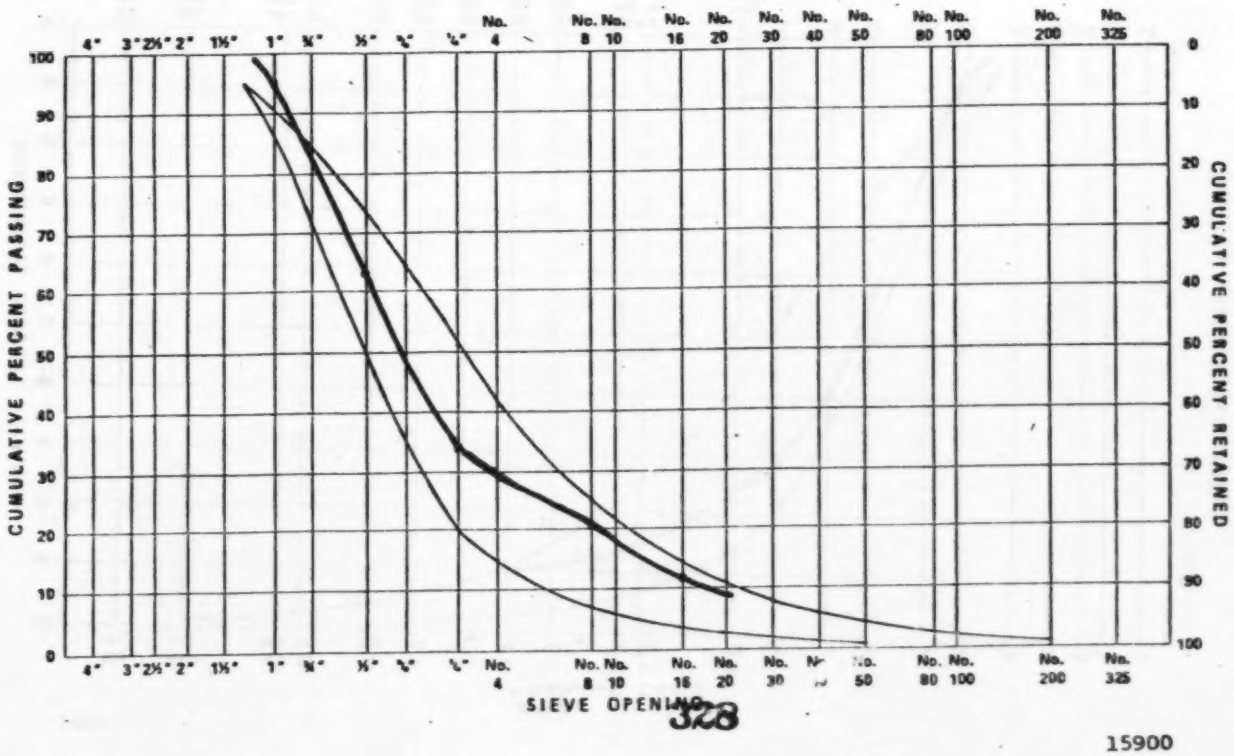
TEST SITE 14

SAMPLE IDENTIFICATION B

DATE SAMPLE TAKEN 2-7-78

TEST PERFORMED BY JOB

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	170.6	469.2 337.0	465.0	5.3	8836.2	100.0	1
1"	↓	1752.7 1358.3	2769.8	31.3	8371.2	94.7	2
½"	↓	1763.4 1109.6	2531.8	28.7	5601.4	63.4	4
¼"	↓	980.5 617.4	1256.7	14.2	3069.6	34.7	8
#8	↓	498.3 303.0	801.3	9.1	1812.9	20.5	16
#16	↓	1182.2	1011.6	11.4	1011.6	11.4	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 17

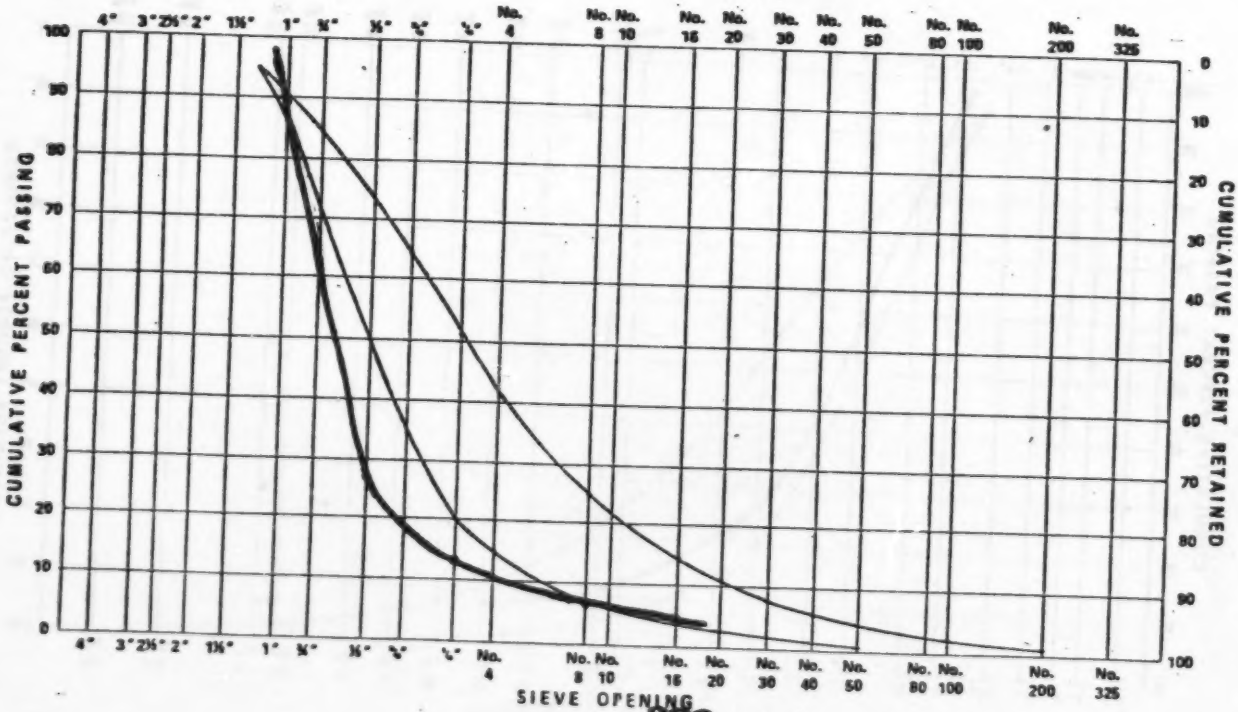
TEST SITE B

SAMPLE IDENTIFICATION Reload

DATE SAMPLE TAKEN 2-9-78

TEST PERFORMED BY JOB

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	9.6	955.0	945.4	10.5	9027.9	100.0	1
1"	10.4	1705.1 1753.3 1940.7 311.3	5668.7	62.8	8082.5	89.5	2
½"	10.3	1312.6	1302.3	14.4	2413.8	26.7	4
¼"	1.6	551.0	540.7	6.0	1111.5	12.3	8
#8	1.7	172.1	170.4	1.9	570.8	6.3	16
#16	8.8	409.2	400.4	4.4	400.4	4.4	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 19 new way

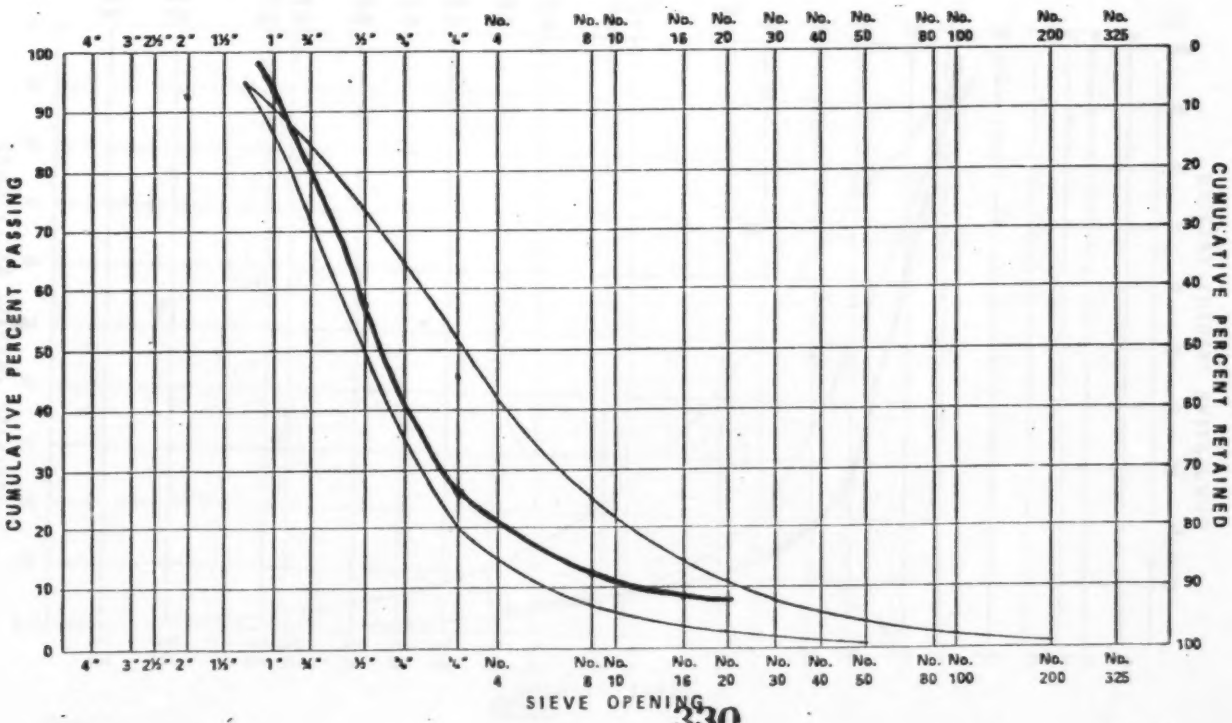
DATE SAMPLE TAKEN 2-18-78

TEST SITE B

TEST PERFORMED BY JD

SAMPLE IDENTIFICATION Kentucky Cumberland

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	1.8 1.9	241.8 241.1	479.2	5.7	8404.3	100.0	1
1"	8.0 8.1	1347.0 1730.2	3111.0	37.0	7925.1	94.3	2
½"	8.1 8.1	1514.2 1186.2	2684.2	31.9	4814.1	57.3	4
¼"	8.2	1098.9	1090.7	13.0	2129.9	25.4	8
#8	1.8	325.0	323.2	3.8	1039.2	12.4	16
#16	8.2	724.2	716.0	8.5	716.0	8.6	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 19 old way

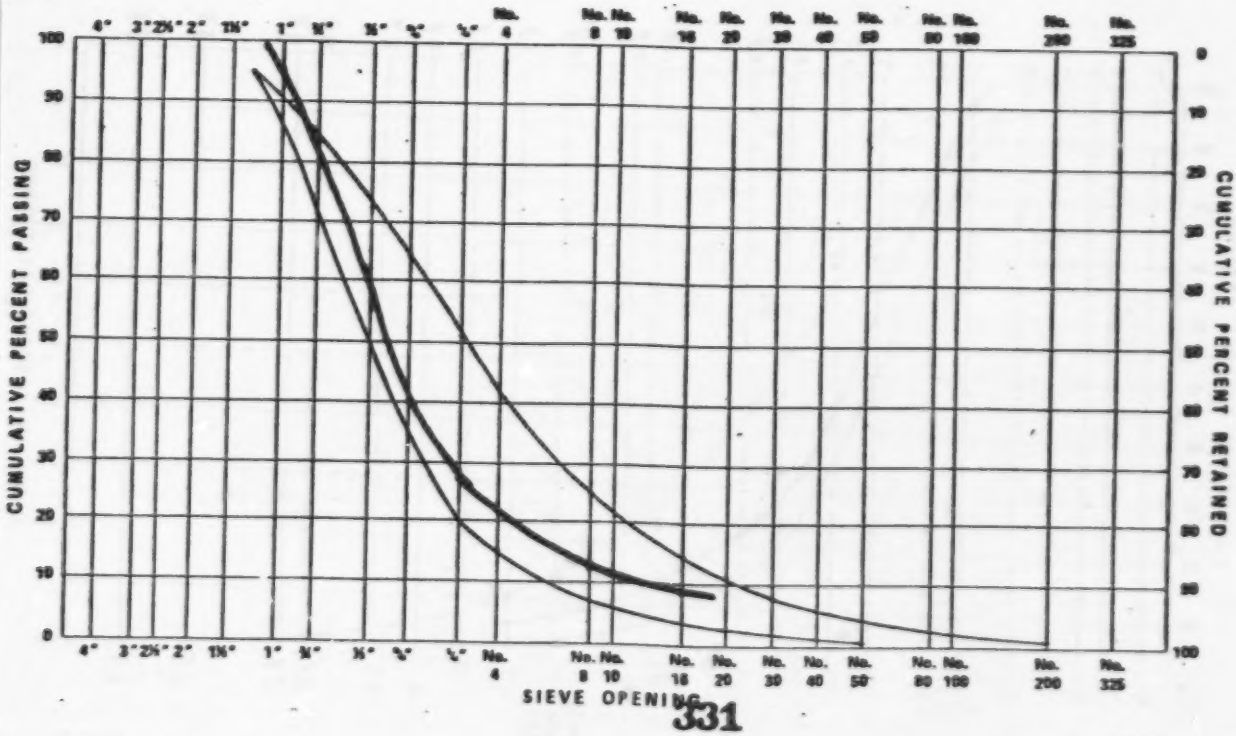
TEST SITE B

SAMPLE IDENTIFICATION Kentucky Cumberland

DATE SAMPLE TAKEN 12-18-78

TEST PERFORMED BY JD

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	1.8	360.7	358.9	4.7	7603.3	100.0	1
1"	8.0 8.1	1525.2 1265.3	2774.4	36.5	7244.4	95.3	2
1/2"	8.1 8.1	1332.2 1095.3	2411.3	31.7	4470.0	58.8	4
1/4"	8.1	1051.5	1043.4	13.7	2058.7	27.1	8
#8	1.8	341.1	339.3	4.5	1015.3	13.4	16
#16	8.1	684.1	676.0	8.9	676.0	8.9	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 20 new way

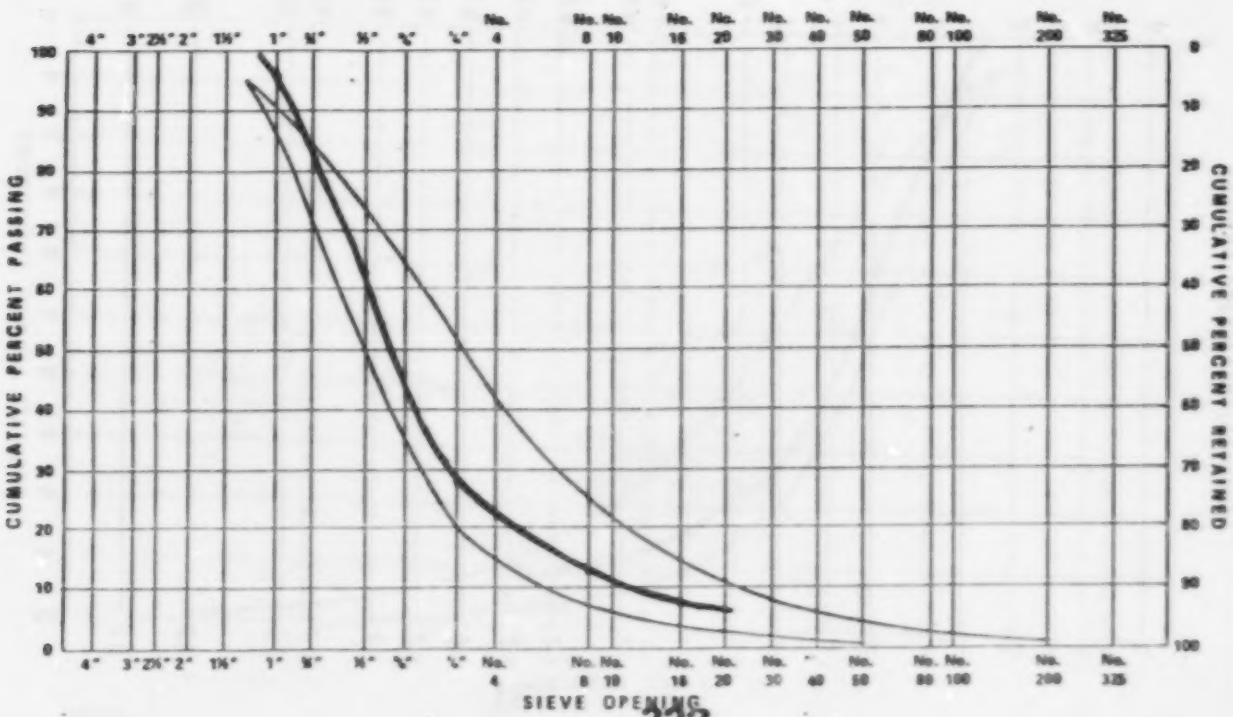
DATE SAMPLE TAKEN 2-18-78

TEST SITE B

TEST PERFORMED BY JD

SAMPLE IDENTIFICATION Kentucky Cumberland

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	1.8	379.5	377.7	4.6	8184.4	100.0	1
1"	8.1 8.1	1723.5 936.6	2643.9	32.3	7806.7	95.4	2
½"	8.1 8.2	1725.6 1140.7	2850.0	34.8	5162.8	63.1	4
¼"	8.1	1349.9	1341.8	16.4	2312.8	28.3	8
#8	8.1	421.9	413.8	5.1	971.0	11.9	16
#16	8.1	565.3	557.2	6.8	557.2	6.8	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 20 old way

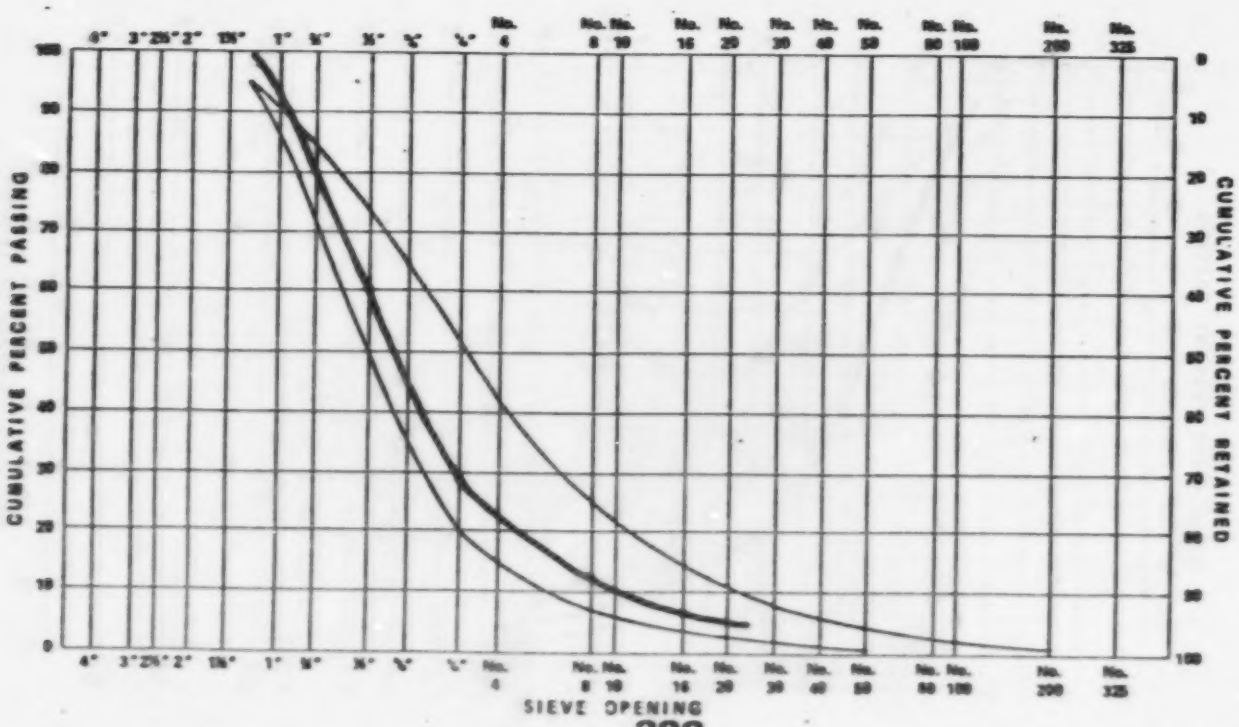
DATE SAMPLE TAKEN 2-18-78

TEST SITE B

TEST PERFORMED BY JP

SAMPLE IDENTIFICATION Kentucky Cumberland

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	19	423.5	421.6	6.4	6554.4	100.0	1
1"	8.1 8.0	1058.5 751.9	2194.3	33.5	6132.8	93.6	2
½"	8.1 8.0	1530.1 584.0	2098.0	32.0	3938.5	60.1	4
¼"	8.1	1053.7	1045.6	16.0	1840.5	28.1	8
#8	1.7	337.5	335.8	5.1	794.9	12.1	16
#16	8.1	467.2	459.1	7.0	459.1	7.1	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 21 new way

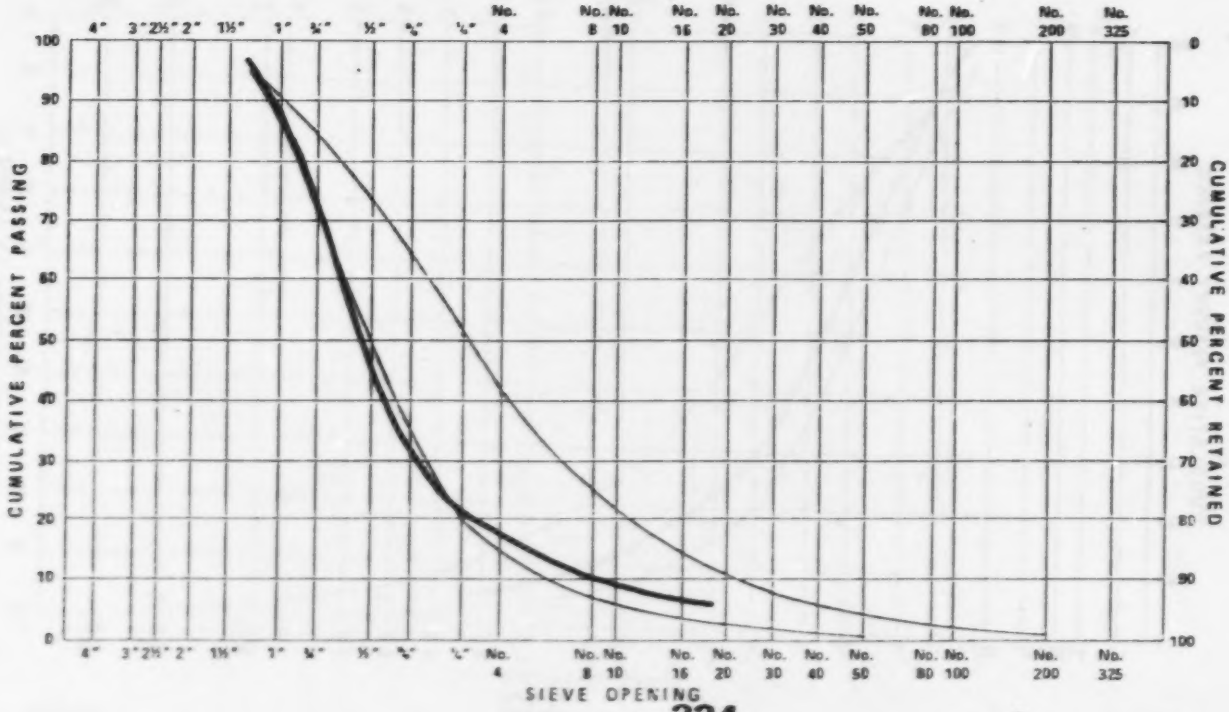
DATE SAMPLE TAKEN 2-20-78

TEST SITE B

TEST PERFORMED BY JDD, JCB

SAMPLE IDENTIFICATION Hartfield

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	8.1	1615.5	1607.4	12.6	12,756.9	100.0	1
1"	8.1	1427.6 1479.1 861.3 1390.5	5126.2	40.2	11,149.5	87.4	2
½"	8.1	1678.2 1696.3	3358.3	26.3	6023.3	47.2	4
¼"	8.1	1367.6	1359.5	10.7	2665.0	20.9	8
#8	1.8	393.2	391.4	3.1	1305.5	10.2	16
#16	8.3	922.4	914.1	7.2	914.1	7.1	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 22

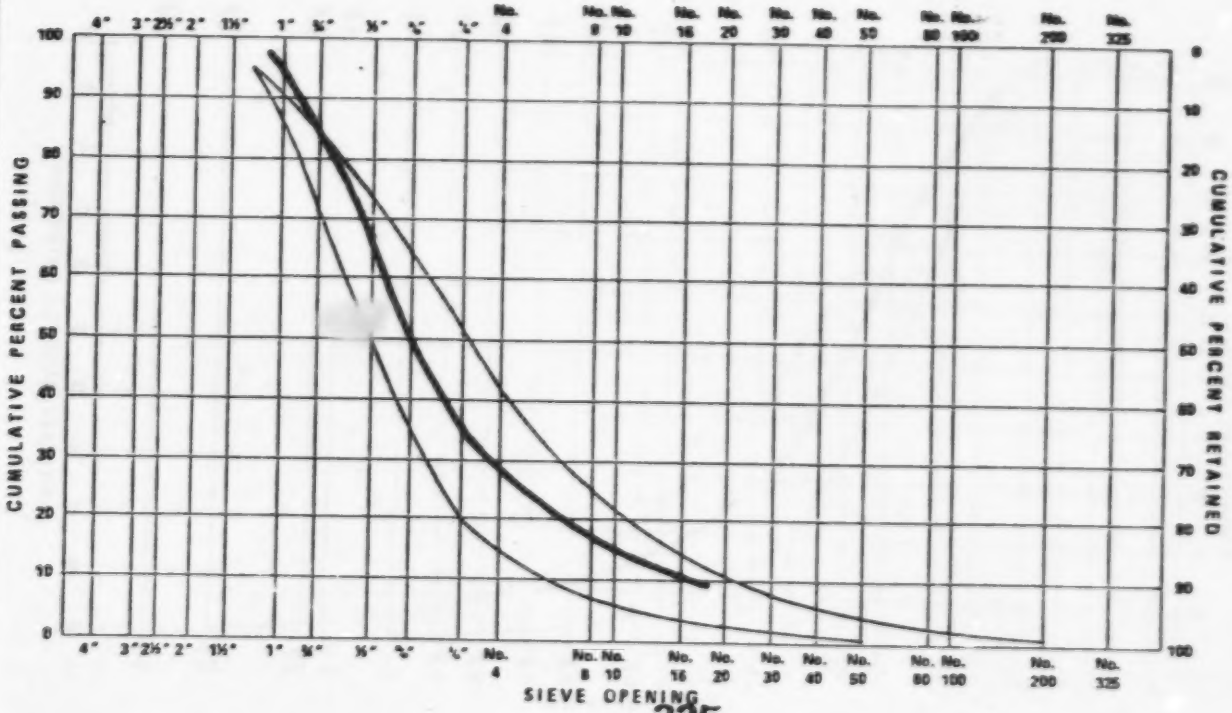
TEST SITE B

SAMPLE IDENTIFICATION Hatfield

DATE SAMPLE TAKEN 2-20-78

TEST PERFORMED BY JDP

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	1.7 1.8	322.2 392.4	711.1	5.5	12,868.6	100.0	1
1"	8.0	1857.3 1737.0	3578.3	27.8	12,157.5	94.5	2
1/2"	8.4 8.1	1930.7 2059.8	3974.0	30.9	8579.2	66.7	4
1/4"	8.4 8.1	1130.3 1289.6	2403.4	18.7	4605.2	35.8	8
#8	8.1	811.9	803.8	6.2	2201.8	17.1	16
#16	8.1	1406.1	1398.0	10.9	1398.0	10.9	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 23 new was

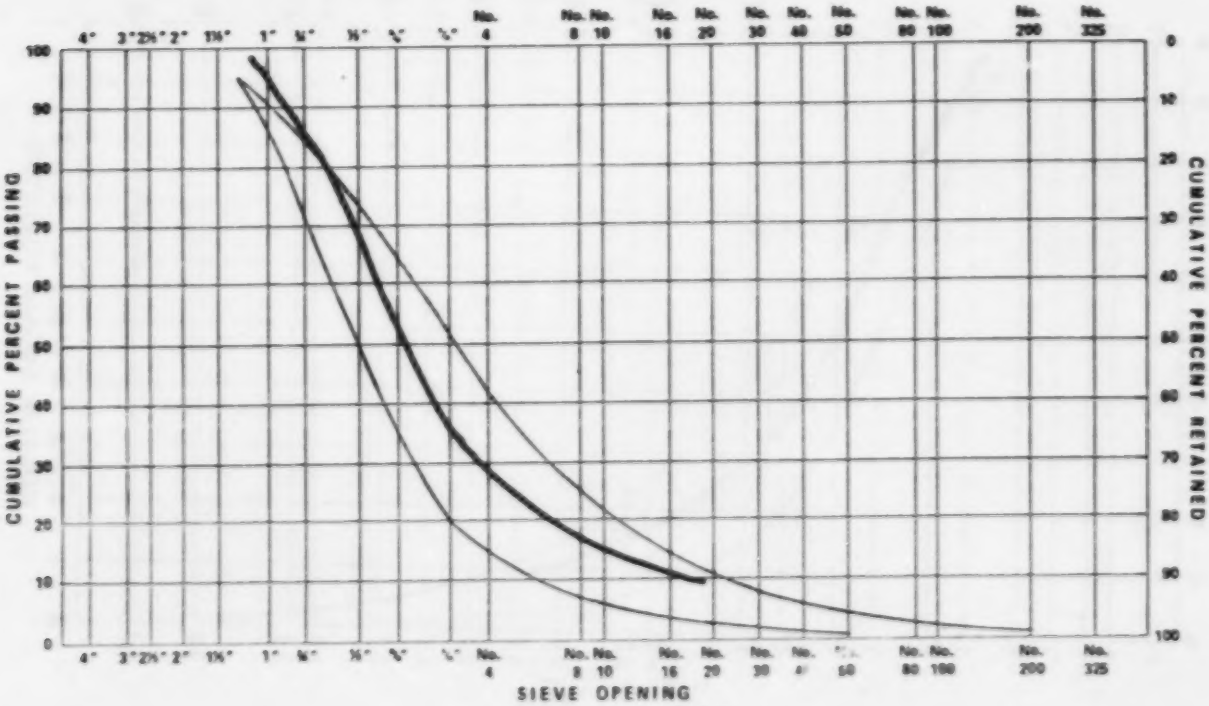
TEST SITE B

SAMPLE IDENTIFICATION Kentucky Cumberland

DATE SAMPLE TAKEN 2-27-78

TEST PERFORMED BY JDD

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	171.5	4411.2 3425	4607	4.7	98582	100.0	1
1"		1659.2 1425.7	2741.9	27.8	9397.5	95.3	2
½"		1827.2 1616.0	3100.2	31.4	6655.6	67.5	4
¼"		1198.1 1071.7	1926.8	19.5	3555.4	36.1	8
#8		459.2 432.9	549.1	6.1	1628.6	16.6	16
#16		1201.0	1029.5	10.4	1029.5	10.5	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 24 new way

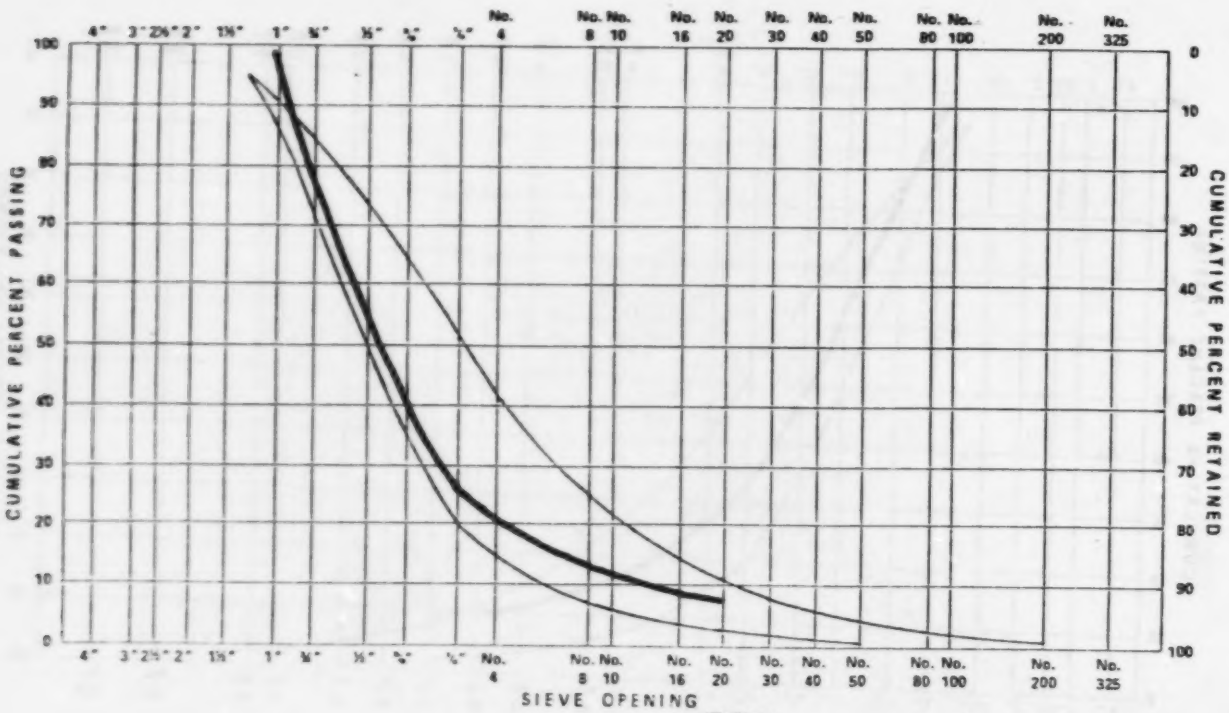
DATE SAMPLE TAKEN 3-2-78

TEST SITE B

TEST PERFORMED BY JDD

SAMPLE IDENTIFICATION Southeast

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	172.2	428.7 387.9	472.2	3.7	12,602.5	100.0	1
1"		2475.1 2114.1 1104.9	5177.5	41.1	12,130.3	96.3	2
½"		1879.5 2181.4	3716.5	29.5	6952.8	55.2	4
¼"		845.2 1044.3	1595.1	12.7	3236.3	25.7	8
#8		357.1 486.3	449.0	3.9	1641.2	13.0	16
#16		1320.4	1148.2	9.1	1148.2	9.1	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 24 old way

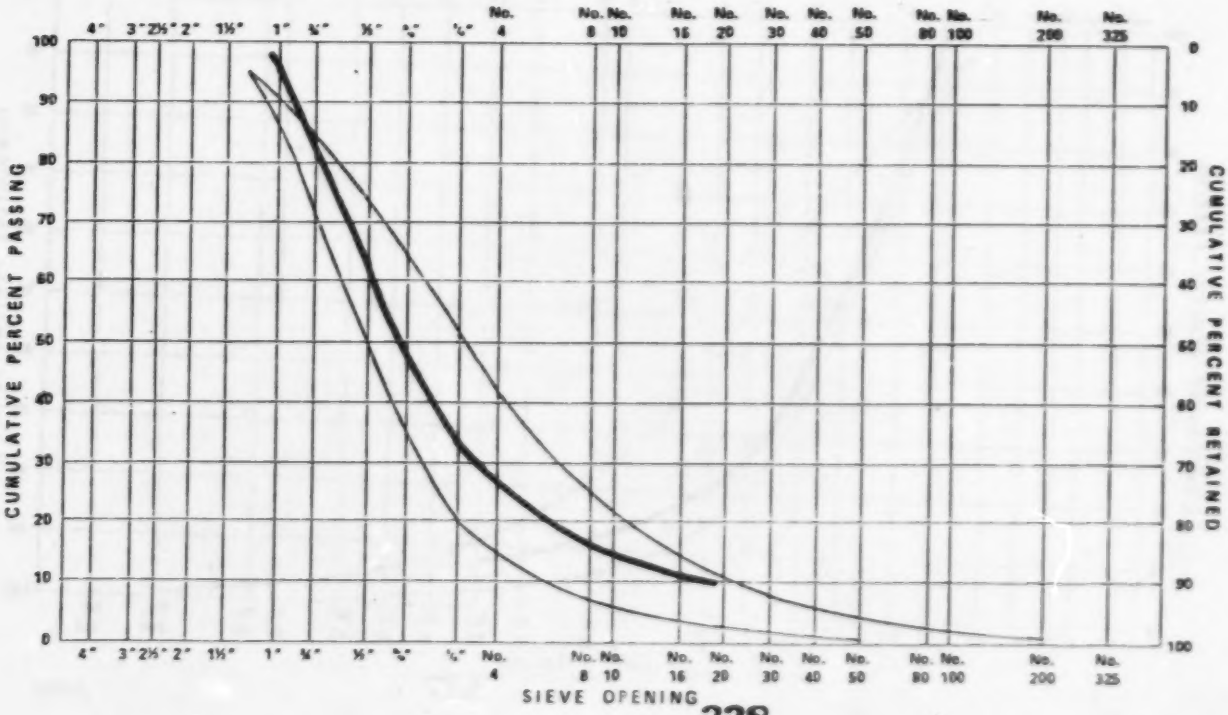
DATE SAMPLE TAKEN 3-2-78

TEST SITE B

TEST PERFORMED BY Jess

SAMPLE IDENTIFICATION Southwest

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	171.5	514.9 293.6	465.5	4.1	11,473.6	100.0	1
1"		1957.6 1282.2 1031.9	3751.2	32.7	11,008.1	95.9	2
½"		2143.2 1618.3	3418.5	29.8	7256.9	63.2	4
¼"		1107.3 1210.5	1974.8	17.2	3838.4	33.4	8
#8		392.8 568.0	637.8	5.6	1863.6	16.2	16
#16		1397.3	1225.8	10.7	1225.8	10.6	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 25 new way

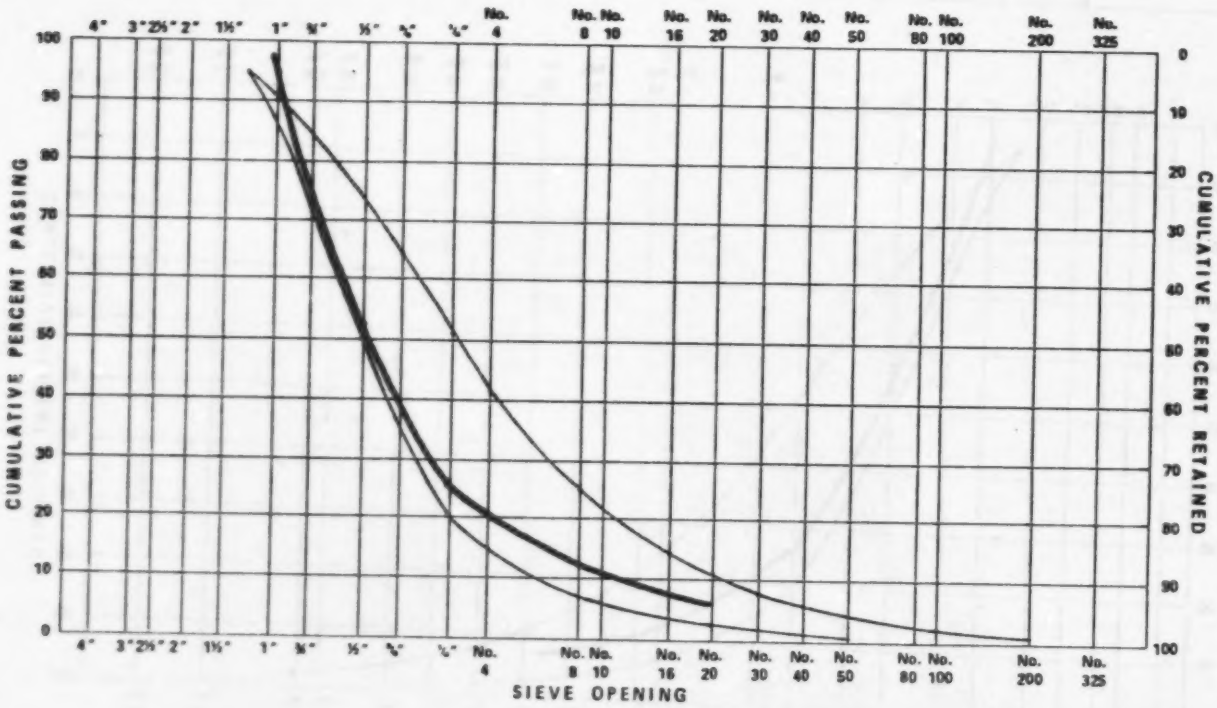
DATE SAMPLE TAKEN 3-3-78

TEST SITE B

TEST PERFORMED BY JDD

SAMPLE IDENTIFICATION Kentucky Cumberland

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	171.4	461.1	289.7	4.6	6353.7	100.0	1
1"		1932.1 1157.6	2740.9	43.1	6064.0	95.4	2
½"		1903.2	1731.8	27.3	3323.1	52.3	4
¼"		1032.7	861.3	13.6	1591.3	25.0	8
#8		415.9	244.5	3.8	730.0	11.4	16
#16		656.9	485.5	7.6	485.5	7.6	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 25 old wxg

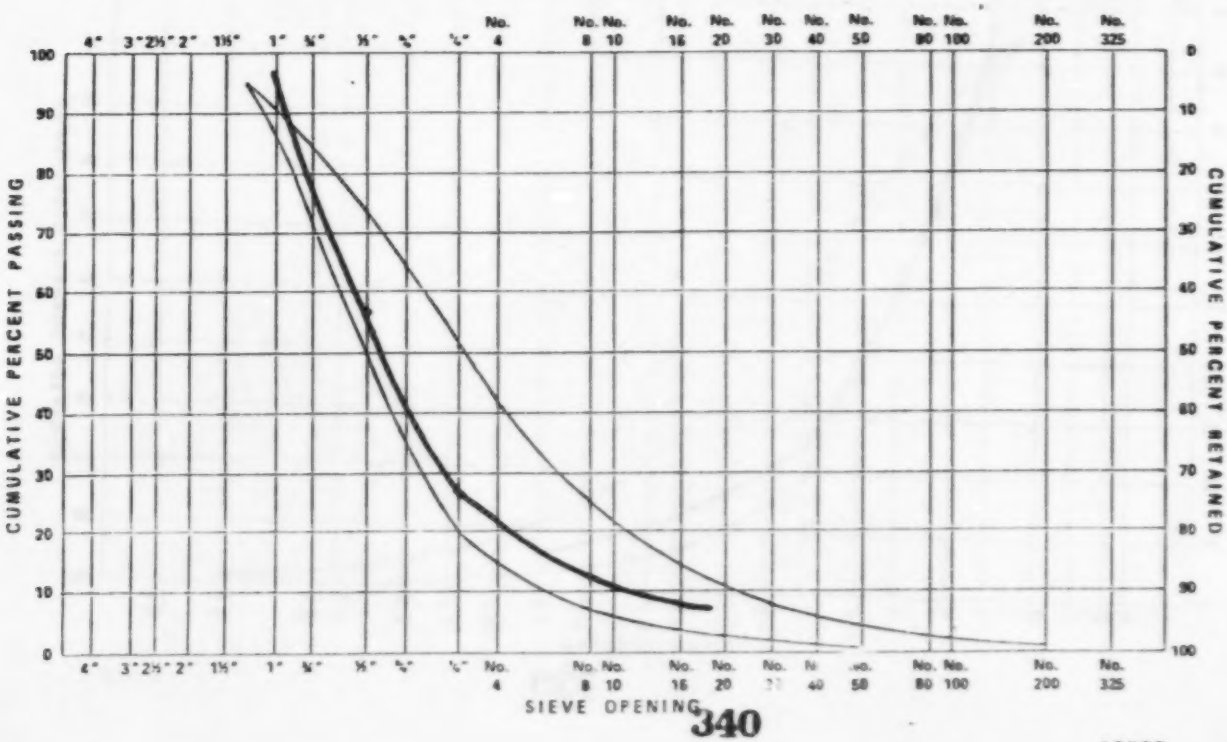
DATE SAMPLE TAKEN 3-3-78

TEST SITE B

TEST PERFORMED BY JDD

SAMPLE IDENTIFICATION Kentucky Cumberland

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	1714	479.2	3078	4.0	7791.8	100.0	1
1"		1894.8 1592.1	3144.1	40.4	7454.0	96.0	2
½"		2485.8	2314.4	29.7	4339.9	55.6	4
¼"		1258.5	1087.1	14.0	2025.5	25.9	8
#8		495.4	324.0	4.2	938.4	11.9	16
#16		785.8	614.4	7.9	614.4	7.7	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 26 new way

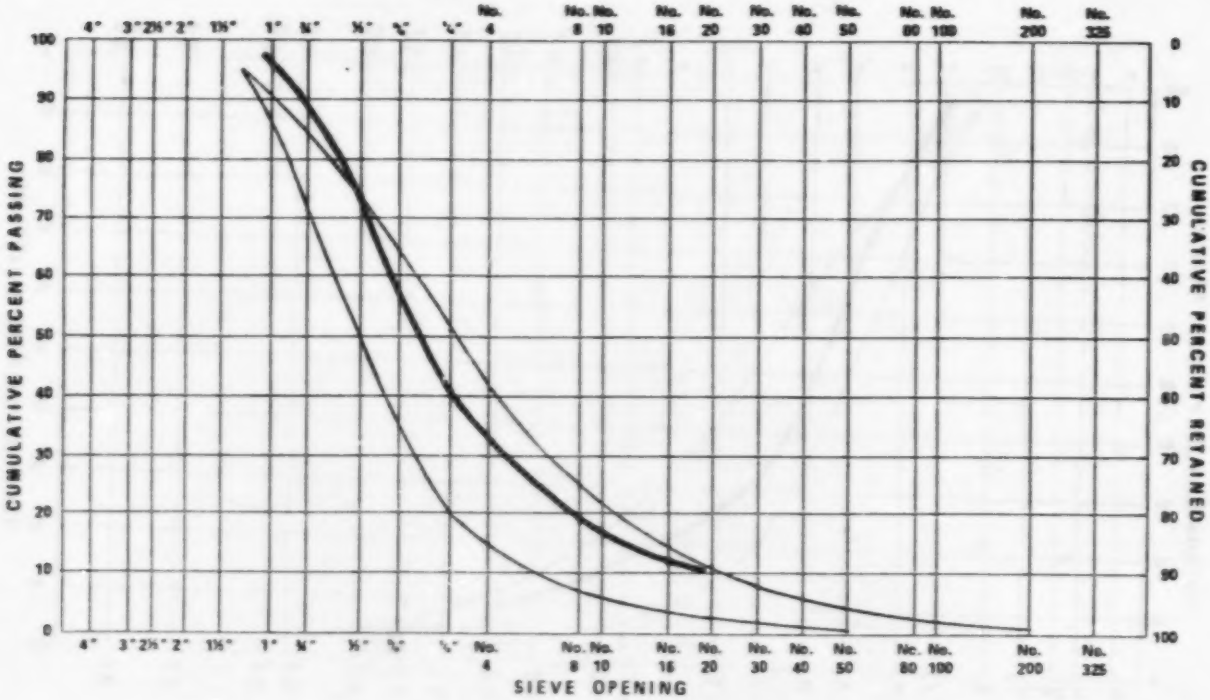
DATE SAMPLE TAKEN 3-5-78

TEST SITE 3

TEST PERFORMED BY JDD

SAMPLE IDENTIFICATION Hatfield

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	171.4	449.2 323.0	429.4	2.8	15,175.7	100.0	1
1"	↓	2396.8 1604.0	3658.0	24.1	14,746.3	97.2	2
½"	↓	2412.5 6348 2184.3	4928.8	32.5	11,088.3	73.1	4
¼"	↓	1070.3 2080.0	3150.3	20.8	6,159.5	40.6	8
#8	↓	342.9 864.4	1207.3	8.0	3009.2	19.8	16
#16	↓	514.2 1287.7	1801.9	11.9	1801.9	11.8	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 26 old way

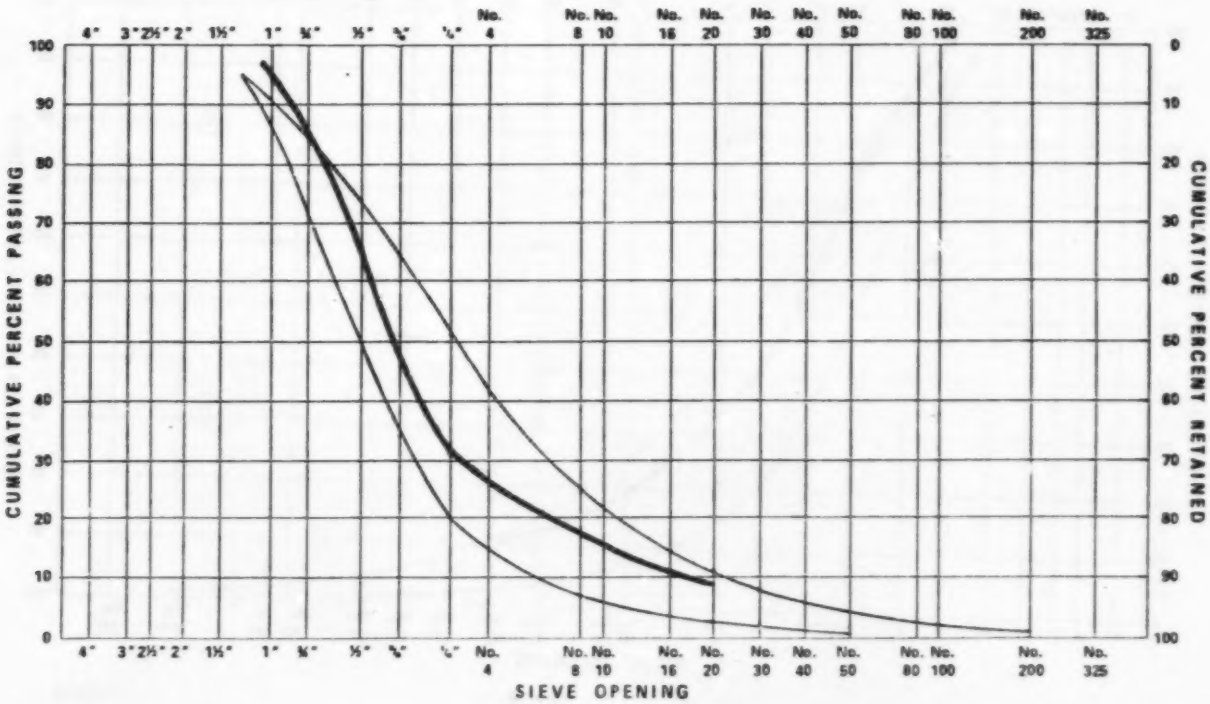
DATE SAMPLE TAKEN 3-5-78

TEST SITE B

TEST PERFORMED BY JDD

SAMPLE IDENTIFICATION Hatfield

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	171.5	476.4 325.1	4585	4.7	9850.5	100.0	1
1"	↓	1770.7 1444.0	2871.7	29.1	9392.0	95.3	2
½"	↓	1694.2 2160.4	3511.6	35.6	6520.3	66.2	4
¼"	↓	974.4 649.1	1280.5	13.0	3008.7	30.6	8
#8	↓	386.5 670.4	713.9	7.2	1728.2	17.6	16
#16	↓	1186.8	1014.3	10.3	1014.3	10.4	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 27 new way

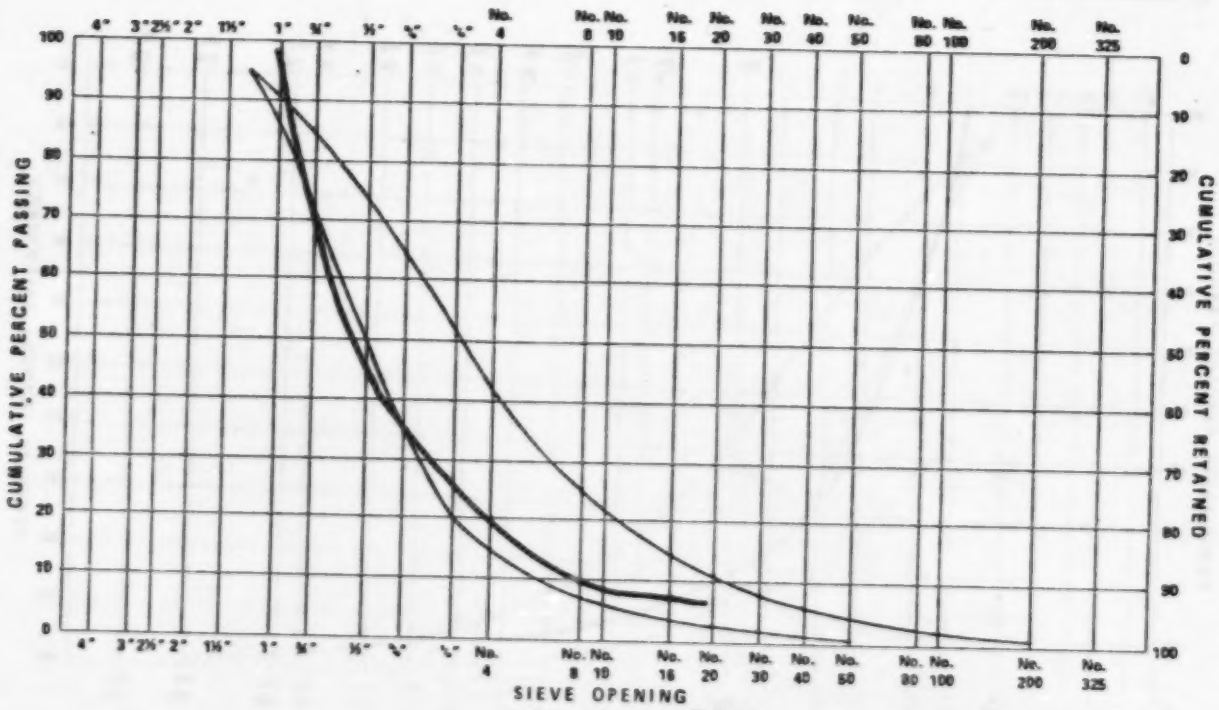
TEST SITE B

SAMPLE IDENTIFICATION Kentucky Cumberland

DATE SAMPLE TAKEN 3-9-78

TEST PERFORMED BY JDD

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	277.1	497.8 398.5	342.1	2.9	11,774.8	100.0	1
1"	↓	2357.3 2019.8 2516.3	6064.1	51.5	11,432.7	97.1	2
½"		1880.0 1703.9	3029.7	25.7	5368.6	45.6	4
¼"		790.7 951.9	1188.4	10.1	2338.9	19.9	8
#8		391.8 528.9	346.5	3.1	1150.5	9.8	16
#16	↓	1061.1	784.0	6.7	784.0	6.7	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 27 old way

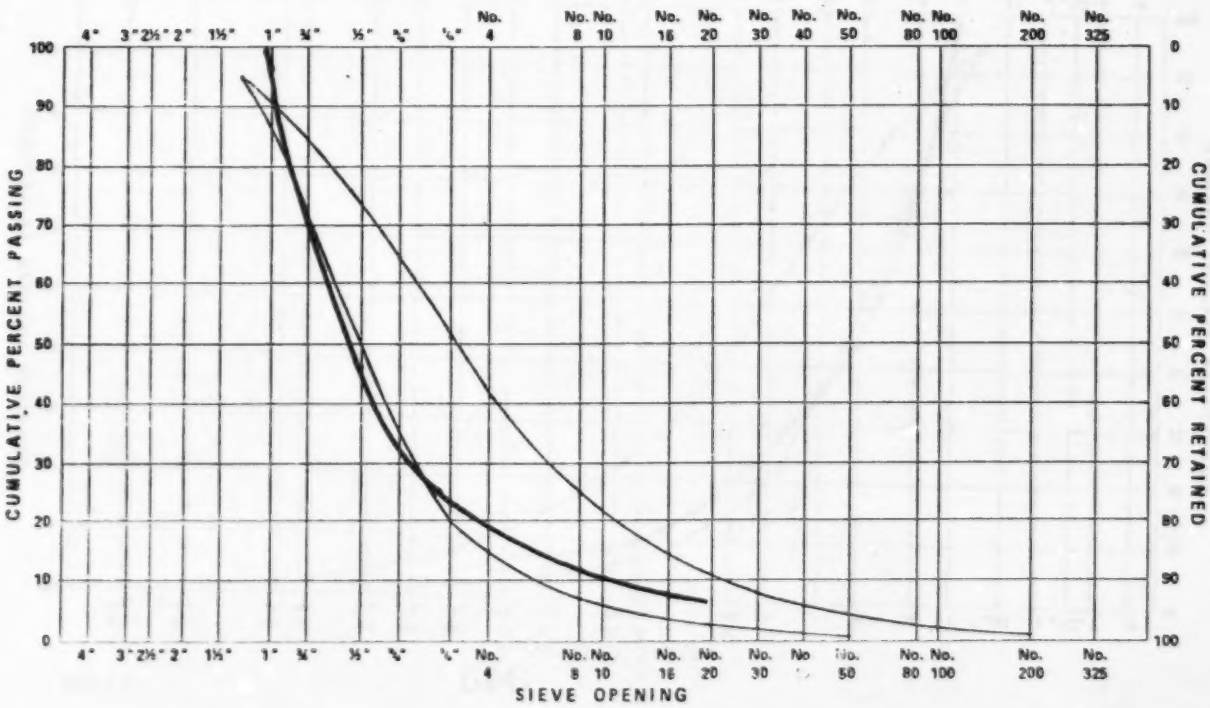
DATE SAMPLE TAKEN 3-9-78

TEST SITE B

TEST PERFORMED BY JDD

SAMPLE IDENTIFICATION Kentucky Cumberland

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	277.1	561.9	284.8	3.4	8344.7	100.0	1
1"	↓	2390.0 2326.9	4162.7	49.9	8059.9	96.6	2
½"	↓	2322.1	2045.0	24.5	3897.2	46.7	4
¼"	↓	1203.3	926.2	11.1	1852.2	22.2	8
#8	↓	595.9	318.8	3.8	926.0	11.1	16
#16	↓	884.3	607.2	7.3	607.2	7.3	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 28 new way

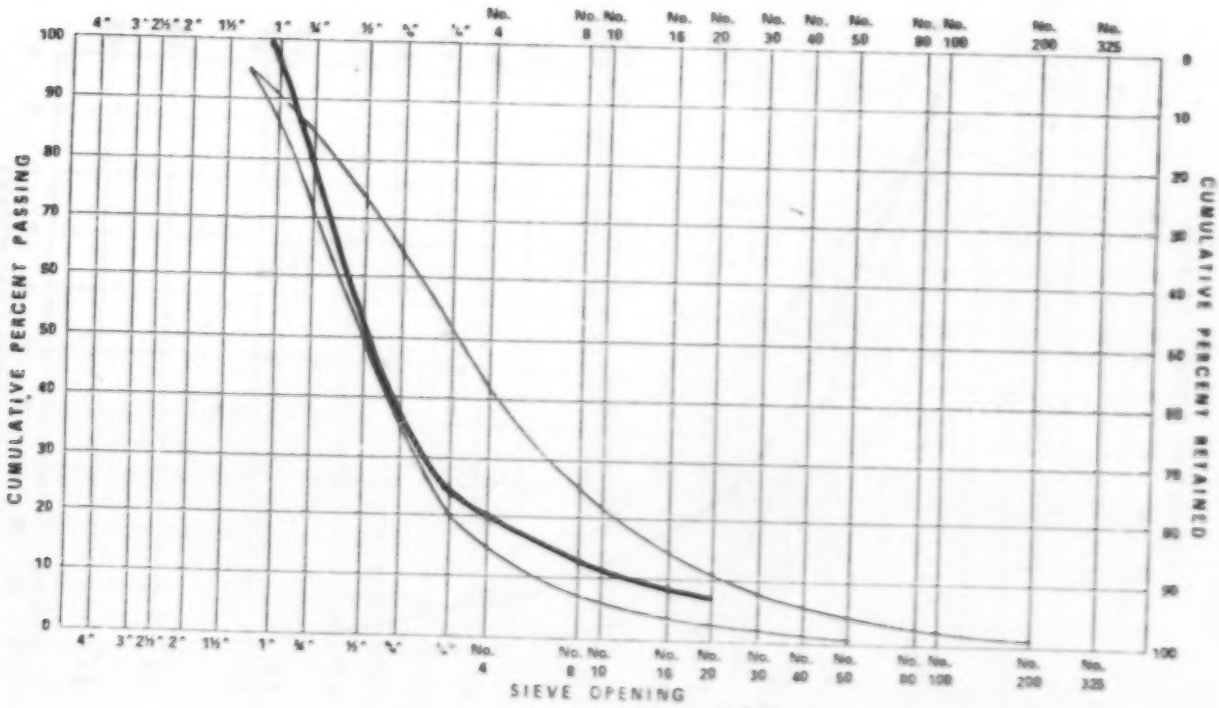
TEST SITE B

SAMPLE IDENTIFICATION Kentucky Cumberland

DATE SAMPLE TAKEN 3-9-78

TEST PERFORMED BY JDD

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	277.2	409.3 4232	278.1	30	93976	100.0	1
1"		2420.2 2357.8	4223.6	44.9	91195	97.0	2
½"		1328.6 1918.4	2692.6	28.7	48959	52.1	4
¼"		545.9 1060.7	1052.2	11.2	22033	23.4	8
#8		320.8 597.6	364.0	3.9	1151.1	12.2	16
#16		1064.3	787.1	8.4	787.1	8.3	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 28 old way

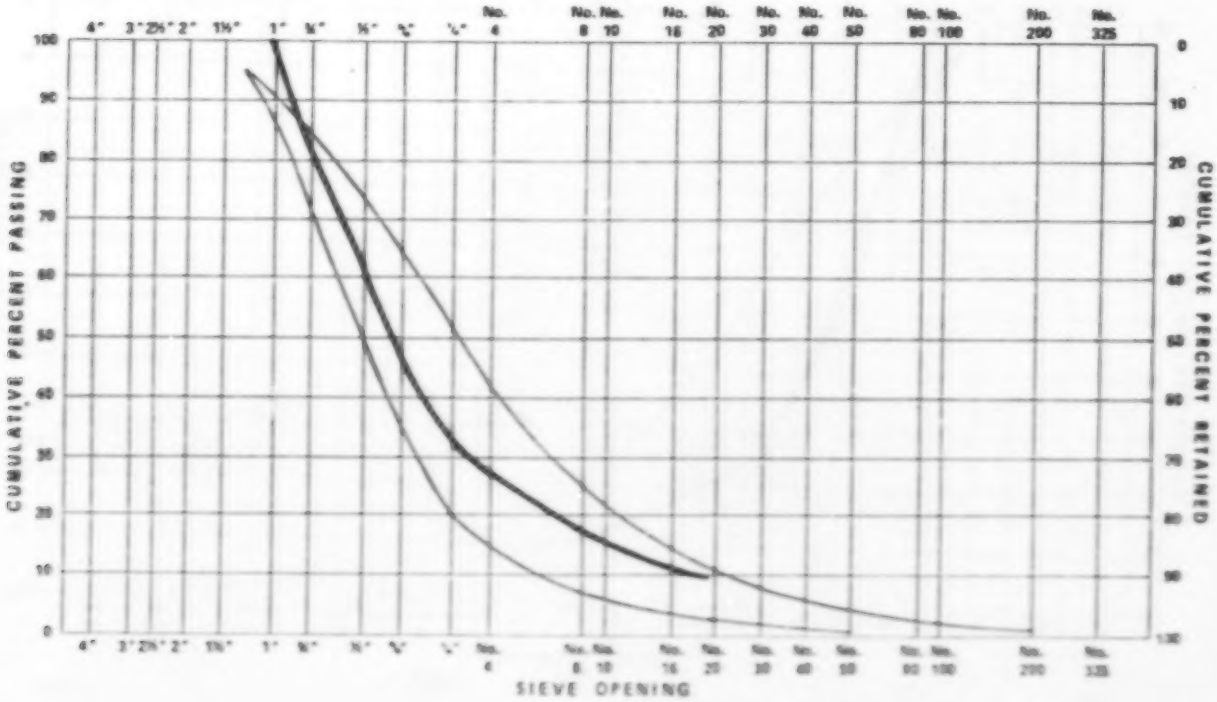
DATE SAMPLE TAKEN 3-9-78

TEST SITE B

TEST PERFORMED BY JDD

SAMPLE IDENTIFICATION Kentucky Cumberland

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	277.2	395.6	118.4	1.5	8046.3	100.0	1
1"		2140.9 1433.7	3020.2	37.5	7927.9	98.5	2
½"		1934.8 963.7	2344.1	29.1	4907.7	61.0	4
¼"		1495.8	1218.6	15.1	2563.6	31.9	8
#8		749.4	472.2	5.9	1346.0	16.8	16
#16		1150.0	872.8	10.8	872.8	10.9	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 30 new way

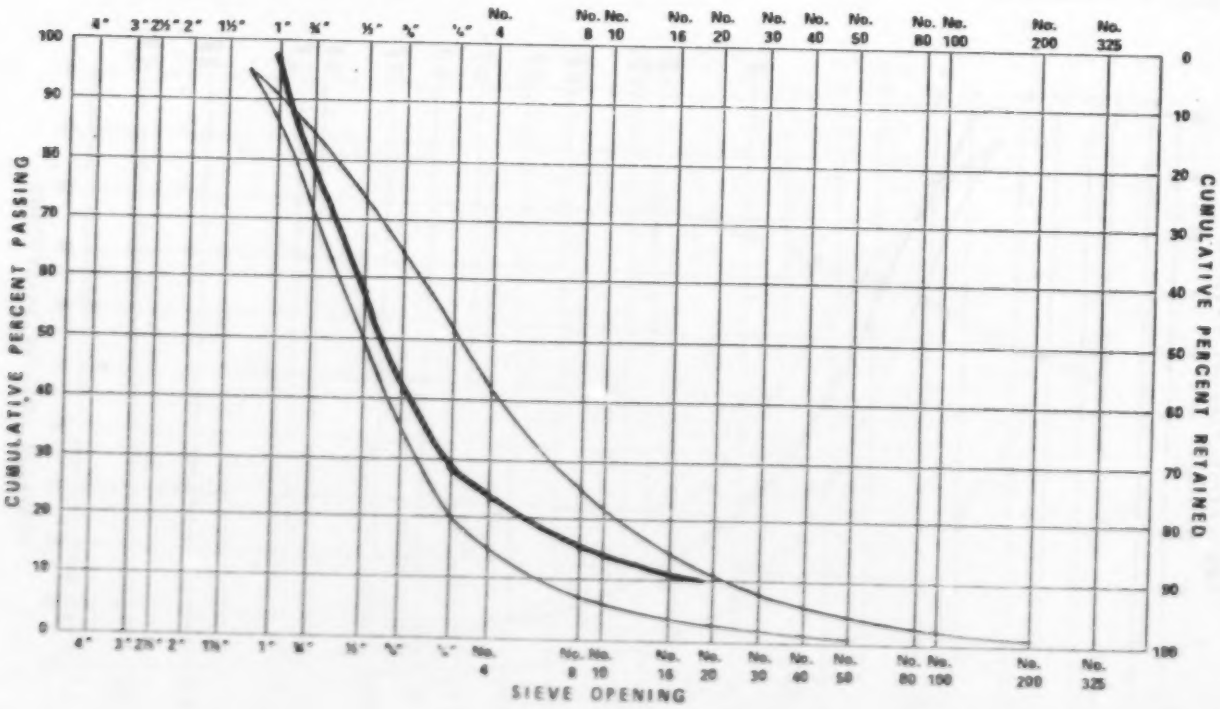
TEST SITE B

SAMPLE IDENTIFICATION Hatfield

DATE SAMPLE TAKEN 3-17-78

TEST PERFORMED BY JDD

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	276.6	492.2 374.6	313.6	2.7	11,721.6	100.0	1
1"		2342.2 2150.0	4646.5	39.6	11,408.0	97.3	2
½"		2172.3 1752.6	3371.7	28.8	6761.5	57.7	4
¼"		1156.2 1053.2	1656.2	14.1	3389.8	28.9	8
#8		495.4 590.3	532.5	4.5	1733.6	14.8	16
#16		1477.7	1201.1	10.2	1201.1	10.3	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 30 old way

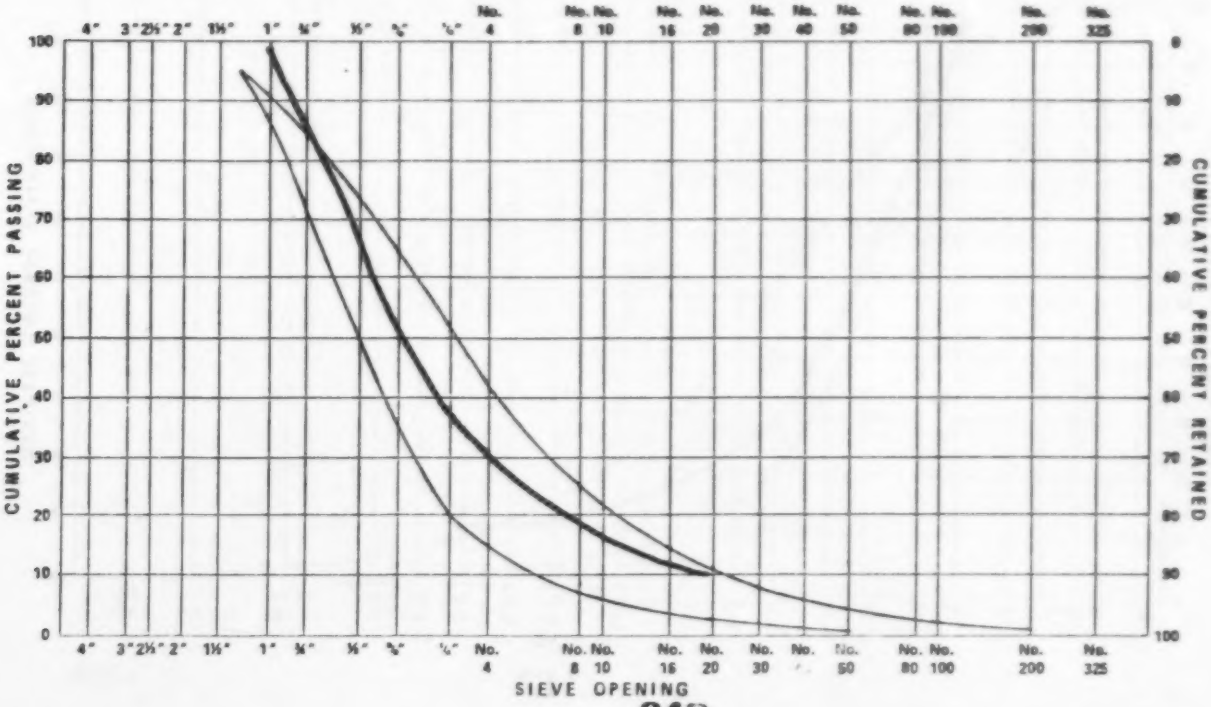
DATE SAMPLE TAKEN 3-17-78

TEST SITE B

TEST PERFORMED BY JDD

SAMPLE IDENTIFICATION Hartford

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
Top	276.6	363.8	87.2	1.2	7295.3	100.0	1
1"	↓	2197.5 795.4	2439.7	33.4	7208.1	98.8	2
½"	↓	1998.7 691.3	2068.8	28.6	4768.4	65.4	4
¼"	↓	1589.2	1352.6	18.0	2681.6	36.8	8
#8	↓	746.3	469.7	6.4	1329.0	18.8	16
#16	↓	1175.9	849.3	12.3	849.3	12.4	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 31 new way

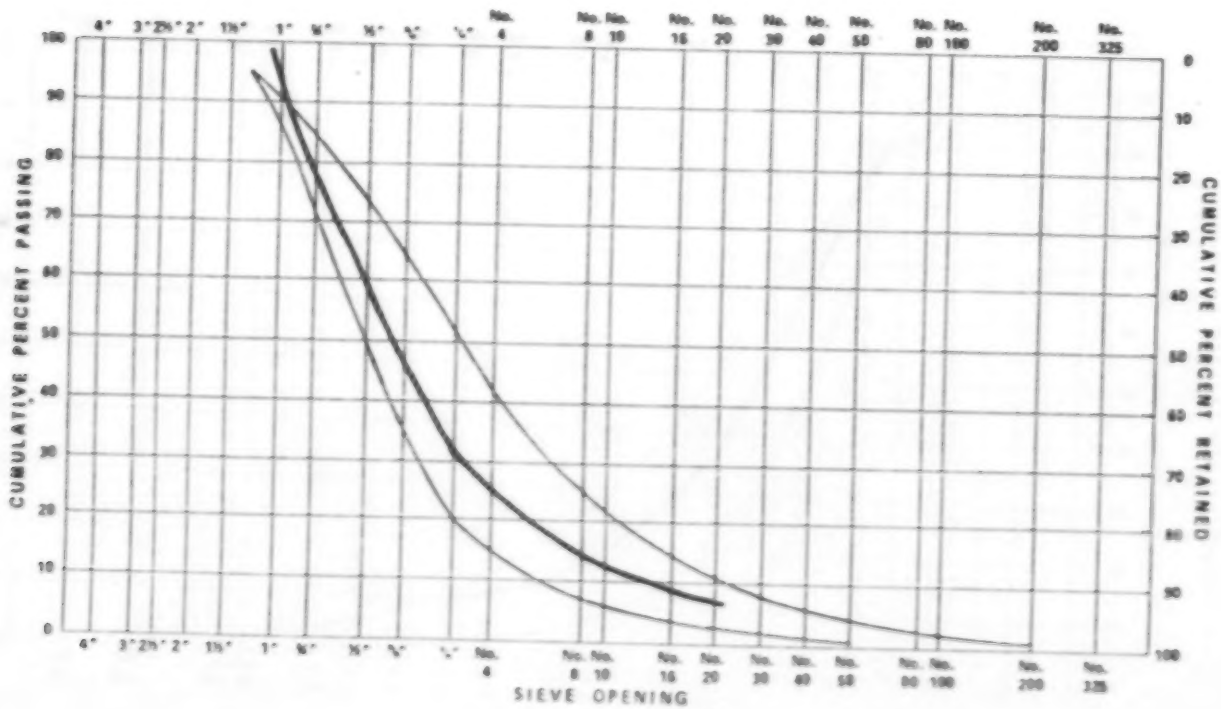
TEST SITE B

SAMPLE IDENTIFICATION Kentucky Cumberland

DATE SAMPLE TAKEN 3-18-78

TEST PERFORMED BY JDD

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	2769	8428 568.2	857.2	6.9	12,491.7	100.0	1
1"	↓	2355.7 10864 447.4	4258.8	34.1	11,634.5	93.1	2
½"		2191.1 1915.7	3553.0	28.4	7375.7	59.0	4
¼"		1208.1 1425.7	2080.0	16.7	3822.7	30.6	8
#8		499.6 103.3	649.1	5.2	1742.7	13.9	16
#16		1310.5	1093.6	8.8	1093.6	8.7	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 31 old way

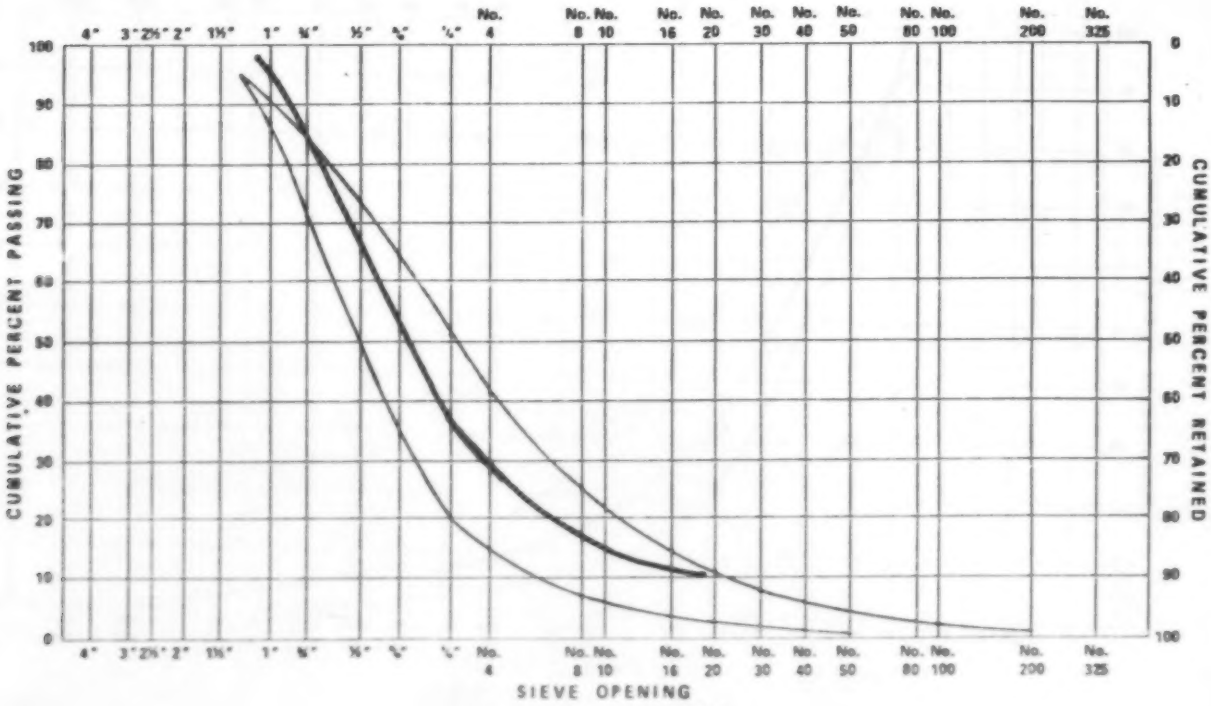
DATE SAMPLE TAKEN 3-18-78

TEST SITE B

TEST PERFORMED BY JDD

SAMPLE IDENTIFICATION Kentucky Cumberland

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	277.2	756.6	479.4	4.7	10,270.1	100.0	1
1"		2243.8 1311.2	3000.6	29.2	9790.7	95.3	2
½"		2228.4 1386.8	3060.8	29.8	6790.1	66.1	4
¼"		2262.4	1985.2	19.3	3729.3	36.3	8
#8		938.9	661.7	6.4	1744.1	17.0	16
#16		1359.6	1082.4	10.5	1082.4	10.6	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 33 Newway

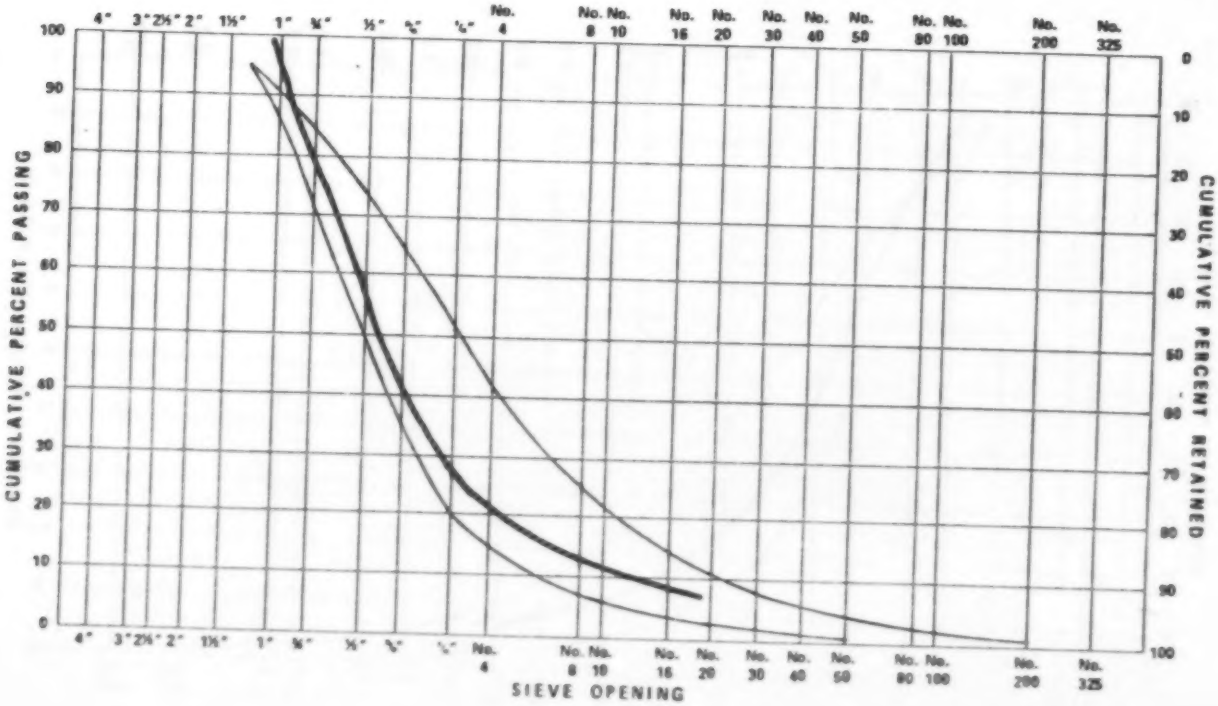
TEST SITE B

SAMPLE IDENTIFICATION Southeast

DATE SAMPLE TAKEN 3-21-78

TEST PERFORMED BY JOD

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	277.2	608.8 337.1	393.5	3.6	10,916.5	100.0	1
1"		2525.8 1203.7 1426.8	4324.7	39.6	10,523.0	96.4	2
½"		2258.3 1671.7	3375.6	30.9	6,198.3	56.8	4
¼"		930.8 1113.8	1490.2	13.7	2,822.7	25.9	8
#8		413.6 591.3	450.5	4.1	1332.5	12.2	16
#16		1159.2	882.0	8.1	882.0	8.1	16



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SIEVE ANALYSIS TEST REPORT

TEST NO. 33 old way

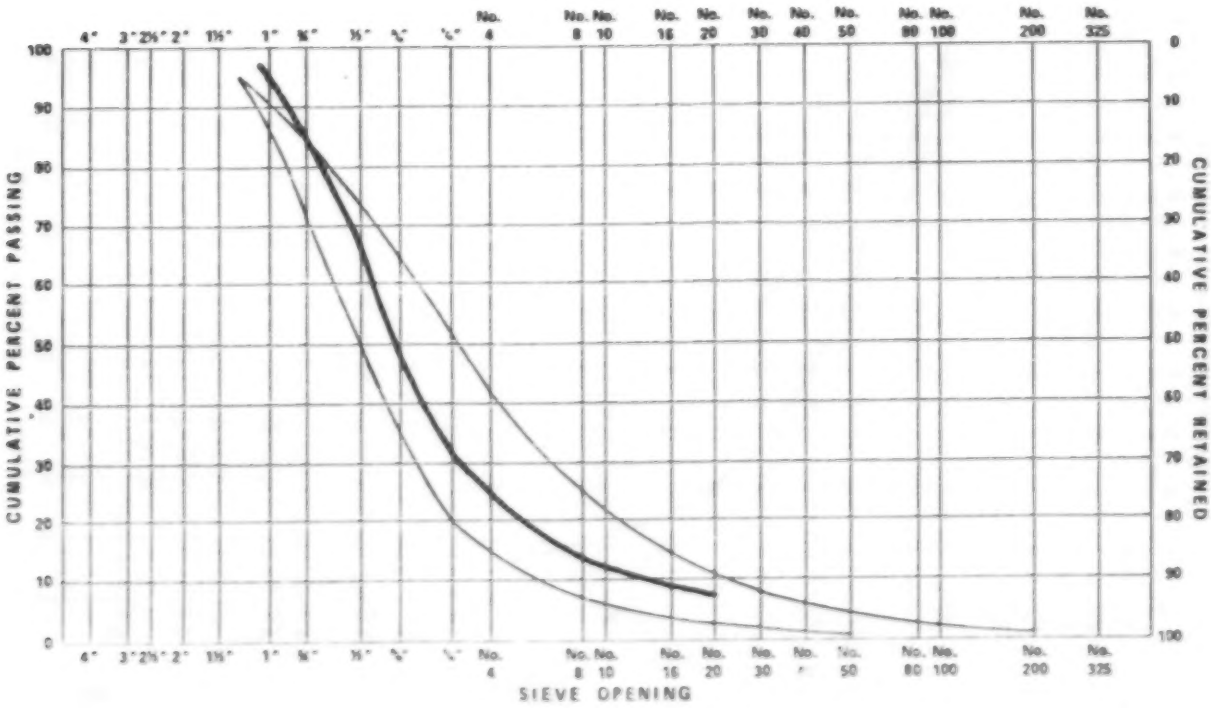
DATE SAMPLE TAKEN 3-21-78

TEST SITE B

TEST PERFORMED BY JDD

SAMPLE IDENTIFICATION Southeast

Screen Size Passing	Tare Weight (gm)	Gross Weight (gm)	Net Weight (gm)	Percent (%)	Cumulative Weight Passing (gm)	Cumulative Percent Passing (%)	Sieve Shaker Duration (min)
TOP	272.2	682.4	405.2	4.8	8394.7	100.0	1
1"		2066.3 916.1	2428.0	28.9	7989.5	95.2	2
½"		2194.5 1289.1	2939.2	35.0	5561.5	66.3	4
¼"		1692.4	1415.2	16.9	2622.3	31.3	8
#8		706.1	433.9	5.2	1207.1	14.4	16
#16		1045.4	773.2	9.2	773.2	9.2	16



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